DEPARTMENT OF HEALTH

ANNUAL REPORT

DIVISION PUBLIC HEALTH ENGINEERING

1981

ANNUAL REPORT

DIVISION OF PUBLIC HEALTH ENGINEERING

DEPARTMENT OF HEALTH

PROVINCE OF NOVA SCOTIA

To the Administrator of Environmental Health:

I respectfully submit the report of the Division of Public Health Engineering for the Calendar Year 1981.

Respectfully submitted,

Peter J. Casey, P.Eng.
Director, Division of
Public Health Engineering

ANNUAL REPORT

DIVISION OF PUBLIC HEALTH ENGINEERING

DEPARTMENT OF HEALTH

1 9 8 1

I N D E X

Responsibilities of the Division	I
Highlights of Work Program	II
Personnel	III
Public Health Inspection	IV
Water Supplies	V
Sewerage	VI
Milk and Dairy Products	VII
Recreational Sanitation	VIII
Solid Waste Disposal	IX
Food Sanitation	X
Schools	XI

SECTION I

RESPONSIBILITIES OF THE DIVISION

The Division of Public Health Enigneering includes both inspection and engineering components and provides services in all phases of environmental sanitation to departmental, municipal and provincial officials, as well as the general public.

The engineering portion includes nine regional public health engineers who report to the Director of Public Health Engineering. Each region is assigned as near as possible on a workload basis and can cover part of, or one or more Health Units. The inspection function is carried out through the eight Health Units in the Province. Public Health Inspectors in each Health Unit report to a Supervisor of Inspectors who in turn reports to the Health Unit Director. The Chief Public Health Inspector is responsible for the technical competence of the Inspection staff through their Supervisors. Both the inspection and engineering components are complementary to each other and a close liaison is maintained between both groups.

Regional Public Health Engineers perform duties as specialists in Public Health Engineering and under the general direction of the Director, are responsible for advising, consulting, planning, inspecting and coordinating the technical plans, policies, procedures and programs at the Health Unit level.

Engineering plans, specifications, and reports of all water and sewage works, major subdivisions, school projects, milk pasteurization plants, campgrounds, trailer parks, swimming pools and construction and extensions to these projects are reviewed by the Public Health Engineers prior to departmental approval being given.

Functioning under the Director, the Chief Public Health Inspector monitors the Public Health Inspection programs carried out in each Health Unit in the Province, assists in the formation of policy related to sanitation and through Health Unit Directors and Supervisors, initiates the implementation of new programs and standards.

Under the direction of the Supervisor of Public Health Inspectors, the Public Health Inspector carries out inspections, regulatory and educational work in promoting and maintaining established standards of sanitation in assigned areas of the Province.

The duties of the Public Health Inspector include inspecting, sampling, testing, reporting and recommending on Public Health Inspection programs, including eating establishments, food vending, housing, schools, foodshops, hair dressing and barber shops, tourist establishments, homes, on-site sewage disposal, garbage disposal, swimming pools, swimming areas, summer camps, picnic sites, public and private water supplies, water and sewage treatment plants, meat processing plants, complaints, food poisoning outbreaks, communicable disease control, pest control, pasteurization plants, and all milk and milk products outlets.

.../2

The Division is responsible for preparing departmental policy and guidelines on the technical aspects of all facets of public health inspection and engineering, including pasteurization plant inspection and milk sampling, on-site sewage disposal, sewage treatment plant inspection, municipal water supply sampling and inspection, swimming and recreational sanitation, school inspections, to name a few. Ultimately, policy guidelines will be prepared by Divisional staff covering each and every major sanitation program. Periodic reviews of policy guidelines and inspection programs with updating and revisions made as required.

The Division is also responsible for the preparation and revision of regulations relating to any phase of environmental sanitation on a provincial basis, and for the review of municipal regulations made under the authority of the Health Act. Preparation of related inspection and report forms is also a function of the Division.

Educational and instructional activities are a major portion of the work program of the Division. Administration and coordination of Health Education programs on a province-wide basis such as in-staff training and foodhandler's courses, is a responsibility of the Division. Lectures are given to other health-related disciplines in all phases of environmental sanitation, papers are presented at professional conferences and meetings, and talks are given to community gatherings.

.../3

Division staff represent the Department on interdepartmental committees related to regional planning, solid waste disposal, subdivisions, housing, well drilling, campgrounds and trailer parks, milk quality, planning and development, and other matters which require input from the Division. Federal/ Provincial committees on such subjects as water quality, environmental contaminants and liaison with federal inspection staff, also require participation by divisional staff, as well as many local, municipal or regional bodies. Divisional staff also participate actively in appropriate professional organizations, including Canadian Public Health Association, Public Health Association of Nova Scotia, Canadian Institute of Public Health Inspectors, American Water Works Association and the Nova Scotia Association of Professional Engineers.

.../4

SECTION II

HIGHLIGHTS OF WORK PROGRAM - 1981

1. Subdivision regulations were drafted, in cooperation with the Department of Municipal Affairs, in 1981 and are expected to be adopted in 1982.
2. A major expansion in engineering staff took place in 1981 with the addition of four engineers and an engineering technologist. A warm welcome is extended to David Pask, P.Eng., Robert Rowe, P.Eng., William Bailey, P.Eng., David Shea, P.Eng., and Don Feldman, Engineering Technologist.
3. Most of our statistical data for 1981 was lost due to a computer foul-up. Consequently there is a dearth of statistical comparisons in this report.
4. Two on-site sewage disposal courses and one design course for professional engineers were given in 1981. These courses were provided in cooperation with the Technical University of Nova Scotia (Continuing Education) and the Association of Professional Engineers of Nova Scotia.
5 Work commenced on the extension of central water supply to Waverley, Nova Scotia. The provision of a central water supply resolves a long-standing concern with arsenic contamination of many private wells in Waverley.
6. Design for cluster sewage disposal systems and upgrading of private systems approved for Port Maitland, Yarmouth County. This is a pilot project based on the Wastewater Management District concept and it is hoped will lead the way to innovative sewage collection and disposal design in the future.

..../5

7. Continued improvement in the quality of dairy products across the province in 1981.

8. All Hospitals and Homes for Special Care were surveyed for asbestos containing materials with the necessary sampling of areas that could be of concern. This work was carried out by Public Health Inspectors and Public Health Engineers under the direction of the Central Office staff, Division of Public Health Engineering.

9. Septic tank installers courses were held in various areas of the Province to better aquaint the contractors with the on-site regulations, to give the installers a means of making suggestions and to give the inspectors and engineers an opportunity to express their views.

10. There was an increase in the in-service education of the inspectors this past year with three(3) attending the National Education meetings at Winnipeg, and half the staff attending the Annual four Provinces Refresher Course for Public Health Inspectors and the other half being able to attend the Technical Sessions held in conjunction with the Public Health Association of Nova Scotia. The staff Public Health Engineers were also in attendance at both meetings held within the Province.

.../6

SECTION III

PERSONNEL

In 1981 the Central Office staff of the Division of Public Health Engineering included the following:

Director:	Peter J. Casey, P.Eng.
Chief Public Health Inspector:	Michael D. MacPhee, B.Sc., CPHI(C)
Secretary:	Mrs. Jane MacKenzie

8 Regional Public Health Engineers were employed with the Division during the year plus one Engineering Technologist, providing Public Health Engineering Services to the Health Units as noted below:

Atlantic Health Unit	David A. Grantham, P.Eng.
Portions of Atlantic and Fundy Health Units	Willard J. D'Eon, P.Eng.
Fundy Health Unit	Bob Rowe, P.Eng.
Lunenburg-Queens Health Unit	Mohan Singh, P.Eng.
Western Health Unit	Mohan Singh, P.Eng.
Northumberland Health Unit	Donald M. Reid, P.Eng. David Shea, P.Eng.
Cobequid Health Unit	Donald M. Reid, P.Eng.
Cape Breton Health Unit	Bill Bailey, P.Eng. Arun R. Kumbhare, P.Eng.

In addition David Pask, P.Eng. commenced his duties as an Engineer Specialist in Central Office and Don Feldman worked as an Engineering Technologist under the direction of David A. Grantham, P.Eng. and Willard D'Eon, P.Eng.

.../7

Two 2nd year and four 1st year Ryerson Students completed field work training in the past year and in addition four summer students were employed during the months of June, July and August.

One of the main functions of the Division is the technical and program monitoring of Public Health Inspection of which there are eight (8) Supervisors, one (1) Assistant Supervisor and fifty eight inspectors distributed throughout stratigic areas of the province. A great deal of emphasis is placed upon program development, and technical development to include surveillance of food, milk and water supplies for parameters which develop because of new information aquired through research.

The Division also co-ordinated inter-departmental and inter-governmental relationships insofar as development of environmental programs are concerned.

.../8

SECTION IV

PUBLIC HEALTH INSPECTION

Because of the loss of 35% to 40% of the computer output due to circumstances beyond the control of the Division we are unable to provide any figures relative to work output as in previous years. This situation has caused undue frustration as far as numerical control and program comparision are concerned.

We do know that the volume of work and program coverage probably exceeded other years with the exception of on-site sewage disposal assessments which experienced some decline in most of the province. It can be stated that more time is now being spent on each site as more land is falling under category II and III lot conditions. One of the reasons could be the fact that the better lands surrounding urban areas has been built upon. The prevailing economic climate no doubt is also a contributing factor to a drop in the construction of new housing.

As in previous years the assessment of building sites (to include final inspections), the monitoring of water supplies and the inspection of eating establishments, continue to be the major part of the Public Health Inspectors work.

Tourist related inspection such as the monitoring and inspection of campsites, picnic sites, tourist establishments (motels, etc.) place a great deal of demand on the inspectors time particularly in areas such as Victoria County and the Division is hard pressed to meet minimum coverage and still give adequate service to on-site assessments during

the summer months.

Our Division's liaision with the Department of Social Services insofar as the inspection and follow-up recommendations pertaining to Homes for Special Care and Day Care Centres was most rewarding during the past year. The co-operation of the operators with the Public Health Inspection staff continued at a high level which contributed to the health and safety of the occupants.

.../10

SECTION V

WATER SUPPLIES

An important portion of the Division's responsibilities is associated with water supplies. The activities include sampling of water supplies for chemical and bacterial quality, advising individuals or municipalities concerning quality problems and review of plans for new water projects. Water supplies which are covered include municipal, private, schools, restaurants, campgrounds, trailer parks and subdivisions.

BACTERIOLOGICAL SAMPLING (TABLE 1)

Municipal water supplies accounted for a total of 15,552 water samples in 1981. This is 8% less than the 1980 figure of 16910 samples. There were about 73 different municipal supplies sampled on a regular basis.

(a) Chlorinated Samples:

95% of the municipal supplies practice chlorination. In 1981, 92% of samples taken from chlorinated supplies were negative for coliform organisms. This is a slight drop from 1980.

Percentage of samples negative for coliform organisms per year:

1981	92.0
1980	93.0
1979	89.0
1978	91.0
1977	86.8
1976	94.3
1975	93.4
1974	89.9
1973	89.6
1972	88.3

The 10 year average was 91.0%

(b) Unchlorinated Supplies:

The percentage of samples negative for coliform organisms in unchlorinated systems was 89%. In 1980, 93% were negative.

(c) General:

In 1980, only 70% of the municipal supplies had over 90% of the samples taken showing no coliform organisms. In 1981 this figure was further reduced to 67% or only 2/3 of the municipal supplies in the Province. The maximum permissible limits, according to the Canadian Drinking Water Guidelines is at least 90% negative samples in any consecutive 30 day period. Although increased coliform growth in the warmer months account for most bad results, this further deterioration in 1981 indicates that the problem of eliminating high bacteria counts has not been adequately addressed.

CHEMICAL SAMPLING

All municipal supplies, both raw and treated were once again sampled for chemical quality in 1981, as well as numerous samples related to specific problems. Further changes were made in the tabulation of chemical quality parameters including treatment processes utilized by each municipal system. The results of the chemical analysis are available in the 1981 Chemical Quality Report, on request.

MUNICIPAL WATER DEVELOPMENT

In 1976, there were 90 Joint Certificates of Approval recommended for projects involving water systems. In 1977, this figure dropped to 82, in 1978 it was 88, in 1979 it was 113, in 1980 it was 75 and in 1981 it was only 78.

A breakdown by region is as follows:

Water System	#	%
Cape Breton	13	17
Antigonish, Guysborough, Pictou Colchester, Cumberland Counties	8	10
Atlantic Health Unit (Halifax County)	42	54
Hants, Lunenburg, Kings, Annapolis, Queens, Digby, Yarmouth, Shelburne Counties	15	19
T O T A L S	78	100

URANIUM

A Uranium Task Force was formed in 1979, following the discovery of uranium in groundwater in the Harrietsfield area of Halifax County. After terms of reference and a proposed investigation program were defined, the task force met several times in 1980 and 1981. The following aspects of the investigation were started in 1980.

- a literature search
- development of a radon sampling technique, in co-operation with the University of Texas

.../13

- background sampling in the Falls Lake area of Hants County
- a study of the possible variation of uranium concentration with time in wells
- an emmissions counter was purchased for radium-226 in water samples
- sampling of all municipal water systems for uranium and related elements
- a sampling survey of wells in the Harrietsfield-Williamswood area of Halifax County

In 1981, the work of the task force was continued.

Early in the year, all municipal water systems were sampled for uranium and the related elements radon and radium. All municipal systems were found to be well below maximum acceptable concentrations.

The assistance of the public health inspection staff and community health nurses enabled the task force to sample all 300 wells in the Harrietsfield-Williamswood area for uranium, radon-222 and radium-226, "spot sample" 35 wells in the Brookside Road area and collect hair and urine samples at a health clinic held in Harrietsfield in May.

HIGHLIGHTS OF WATER SUPPLY PROGRAM

- The cities of Halifax and Dartmouth continued upgrading and replacement of their water main systems.
- The Lakeside-Timberlea area was serviced with a new water reservoir and pressure booster station.

.../14

- Parkdale Subdivision, Timberlea, had a water system chlorination facility installed.
- The Waverley Community water supply was begun in 1981 with 3 contracts to extend watermains from Sackville along the Cobequid Road.
- The Town of Glace Bay contined general improvements to its water system.
- Devco's Transportation and Maintenance Centre was constructed and 7500 feet of firemain was extended from the Victoria Junction coal wash plant. A well was drilled for the potable water supply.
- North Sydney extended it's watermain with the construction of 1300 feet on King Street. The new reservoir for the Town was completed in the fall of 1981.
- An in-depth sanitary survey was performed for the Town of Truro with resulting recommendations. The Department of Health Engineering Division presented evidence to the Board of Public Utilities concerning the Town's request to annex its watershed.
- The Town of Oxford had a study performed to determine the most feasible source of additional water. Financial considerations have postponed action on it.
- Recommendations were made concerning problems encountered with the Stewiacke, Tatamagouche and Truro Municipal Water Supplies.
- The Town of Pictou initiated the installation of equipment to remove manganese from the Public Works well and started using water from the shallow well in the Caribou area.

- Recommendations were made concerning problems with the municipal water supplies of Antigonish, Pictou, St. Andrews, Stellarton, Trenton and Westville.
- A new water supply was installed for the Plymouth Park area of Pictou County.
- Regulations for the Minampkeak Lake protected water area were finalized.
- Difficulties were encountered with the fluoride machine for the Town of Lunenburg.
- The Town of Bridgewater approved fluoridation of it's water supply.
- Bacteriological problems occurred in Bridgewater during the installation of the new standpipe. The town was obliged to boil its water for about two weeks.
- Ground water studies were initiated for the Municipalities of Chester and Lunenburg.
- Swabbing of the water mains in Liverpool was continued which should greatly improve its water system.
- Construction began on Phase II of the new water line project for the Town of Shelburne. This included installation of the new trunk watermain and design of the new treatment plant. The proposed process of preozonation followed by biological activated carbon was being studied by the Engineering Division, Department of Health.
- Construction began on the new transmission lines for the Town of Yarmouth. The second phase design of the two standpipe reserviors was completed. This should greatly improve the capacity of the existing system.

- The design was completed for the new enclosed reservoir for the Town of Digby but financial problems forced postponement.
- The New Minas municipal water supply was expanded with new transmission lines which would also serve part of the village of Greenwich.

PREFACE TO TABLE 2

The bacteriological analyses results listed in the following tables were determined from samples of treated water collected from Nova Scotia Municipal water supply systems during 1981.

The main purpose of the analyses is to ensure that the water supply systems are providing a safe, potable water. It is also an indicator of the capacity of various treatment systems to provide the municipalities with potable water.

Certain private water supplies may be periodically sampled throughout the year provided they serve several households. These samples are not included in this report and inquiries in this regard can be directed to the appropriate officials of the Department of Health.

The above samples are "grab" samples and therefore only represent the quality of the water at the time of sampling and at the point of sampling. The results however, are useful in determining variations within the systems from year to year.

The bar graphs included in this report are intended to indicate the presence of coliform bacteria in municipal water supplies from month to month. This presents both the seasonal variation of the indicator organism population and the effectiveness of the treatment process in the particular municipal water supply.

TABLE 2

RESULTS OF LABORATORY EXAMINATIONS OF
MUNICIPAL WATER SUPPLIES

PROVINCIAL HEALTH UNIT

1981

MUNICIPALITY	NUMBER OF SAMPLES TAKEN	NEGATIVE FOR COLIFORM ORGANISMS	
		NO.	%
Provincial TOTAL	15,552	14,394	92.0%
Chlorinated	15,297	14,166	93.0%
Unchlorinated	255	228	89.0%

.../19

TABLE 2

RESULTS OF LABORATORY EXAMINATIONS OF
MUNICIPAL WATER SUPPLIES

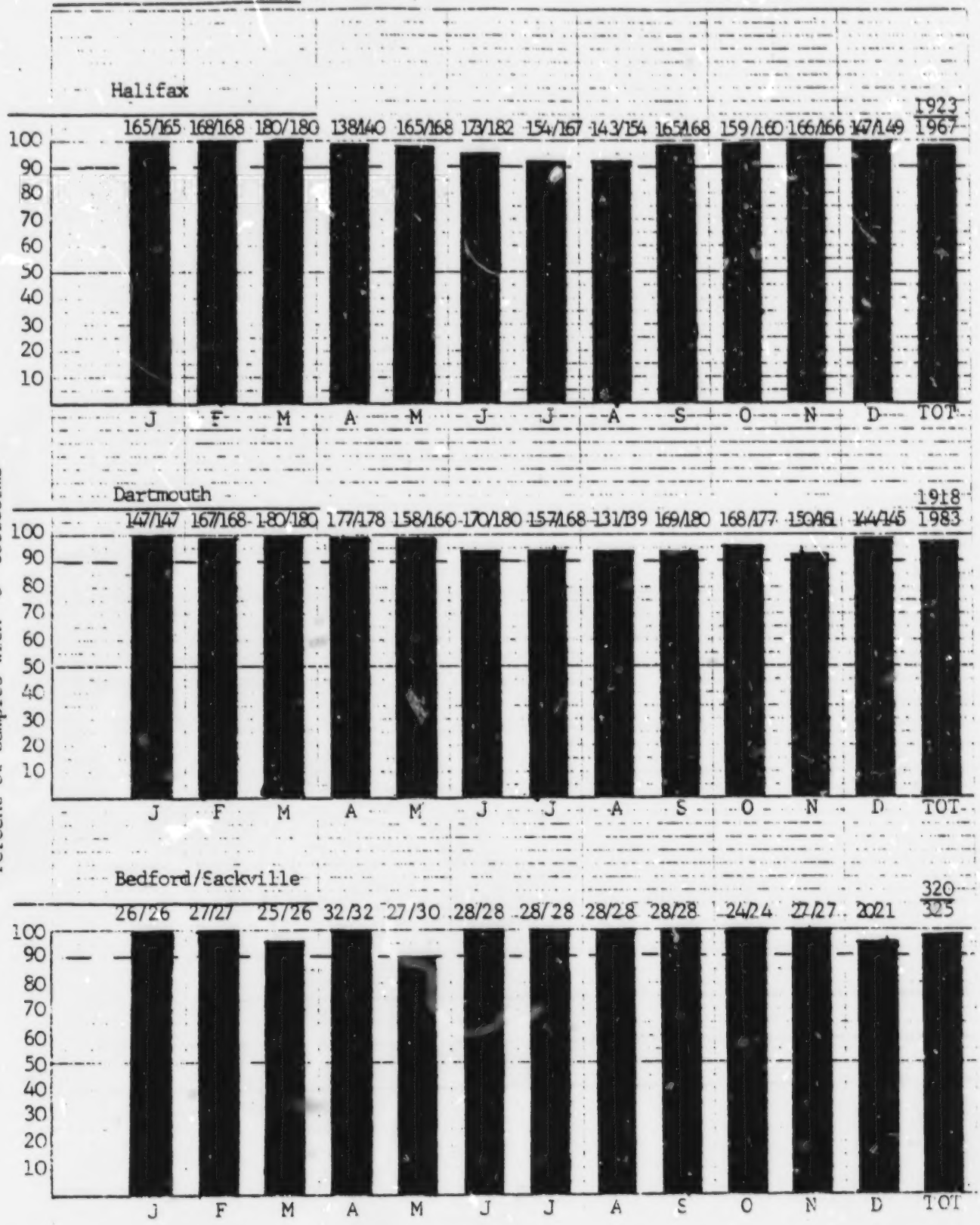
ATLANTIC HEALTH UNIT

1981

MUNICIPALITY	NUMBER OF SAMPLES TAKEN	NEGATIVE FOR COLIFORM ORGANISMS	
		NO.	%
City of Halifax*	1967	1923	97.8
City of Dartmouth*	1983	1918	96.7
(Includes some areas of			
Halifax County served by			
Dartmouth water system)			
County of Halifax -			
Long Lake - North Preston	46	43	93.5
Bedford - Sackville*	325	320	98.5

* Fluoridated

ATLANTIC HEALTH UNIT . BACTERIOLOGICAL RESULTS



Percent of Samples with "0" Coliforms

MONTH OF YEAR
1981

.../21

TABLE 2

RESULTS OF LABORATORY EXAMINATIONS OF
MUNICIPAL WATER SUPPLIES

CAPE BRETON NORTH HEALTH UNIT

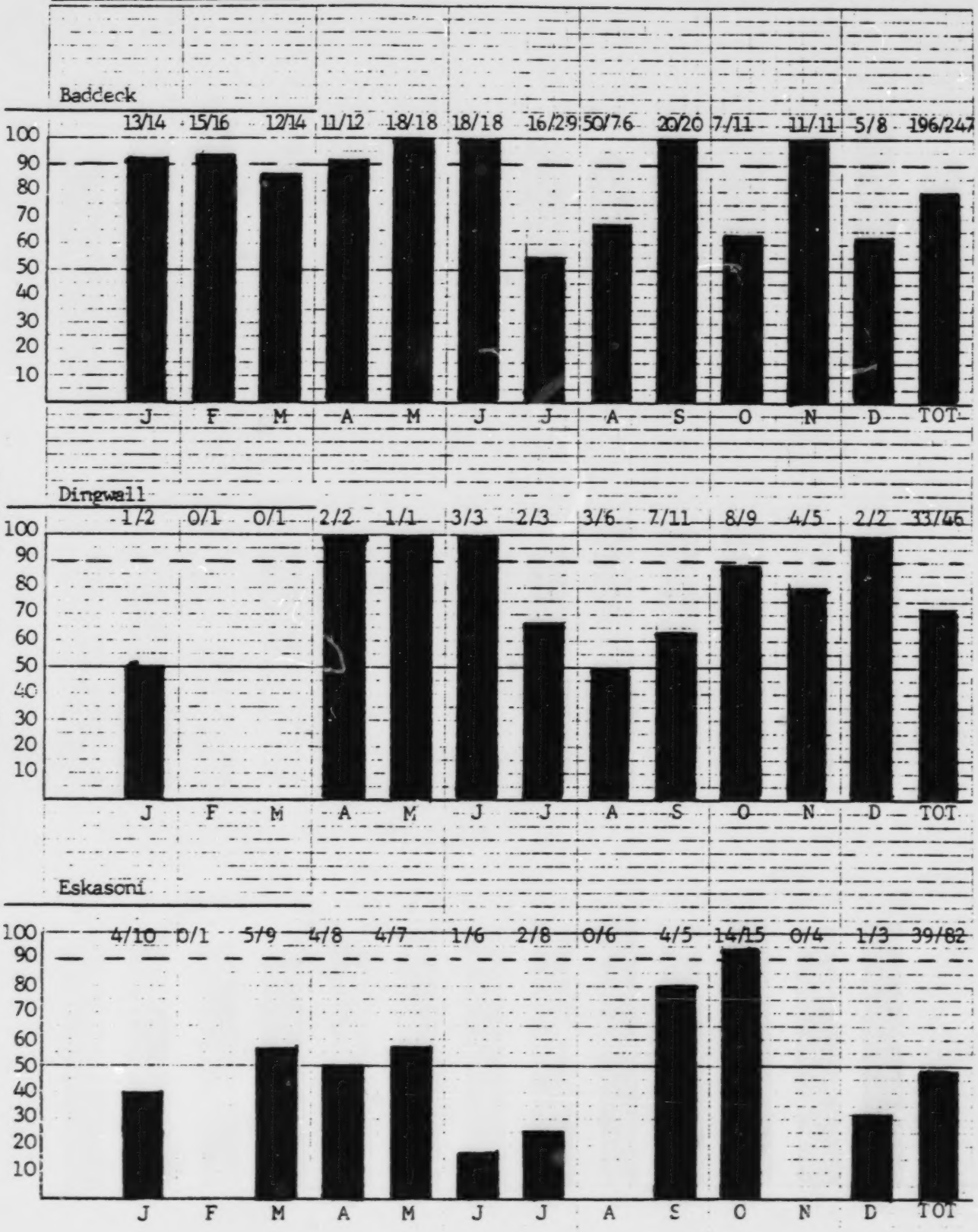
1981

MUNICIPALITY	NUMBER OF SAMPLES TAKEN	NEGATIVE FOR COLIFORM ORGANISMS	
		NO.	%
Baddeck	247	196	79.4
Dingwall	46	33	71.7
Eskasoni	82	39	47.6
Northside	473	441	93.2
Point Edward	156	137	87.8
Steel Company	451	370	82.0
Sydney *	671	646	96.3

.../22

Cape Breton North HEALTH UNIT

BACTERIOLOGICAL RESULTS

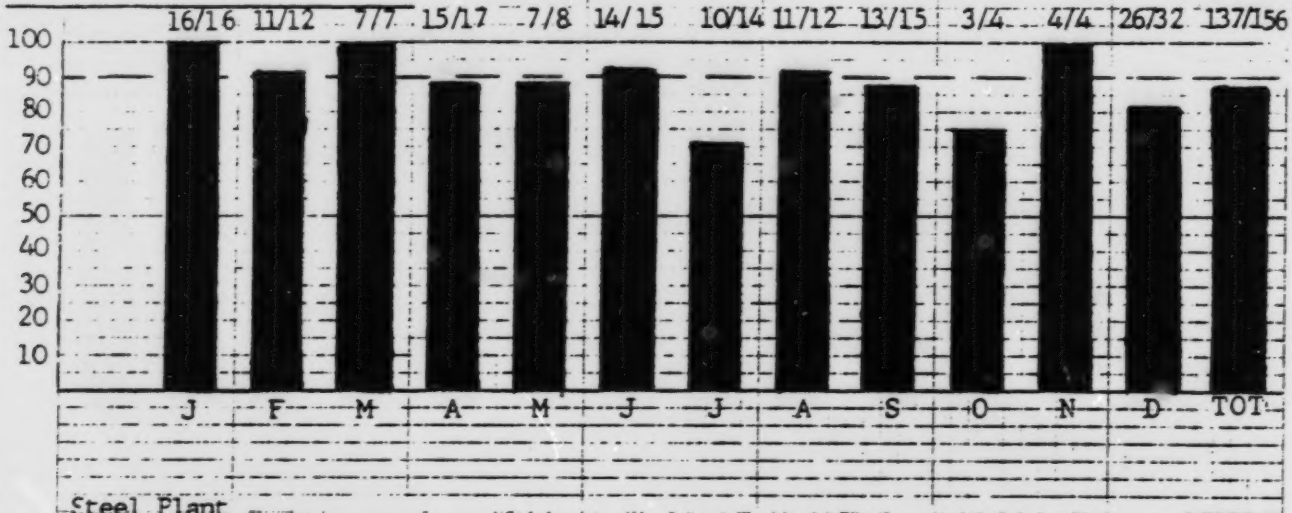


.../23

Cape Breton North HEALTH UNIT

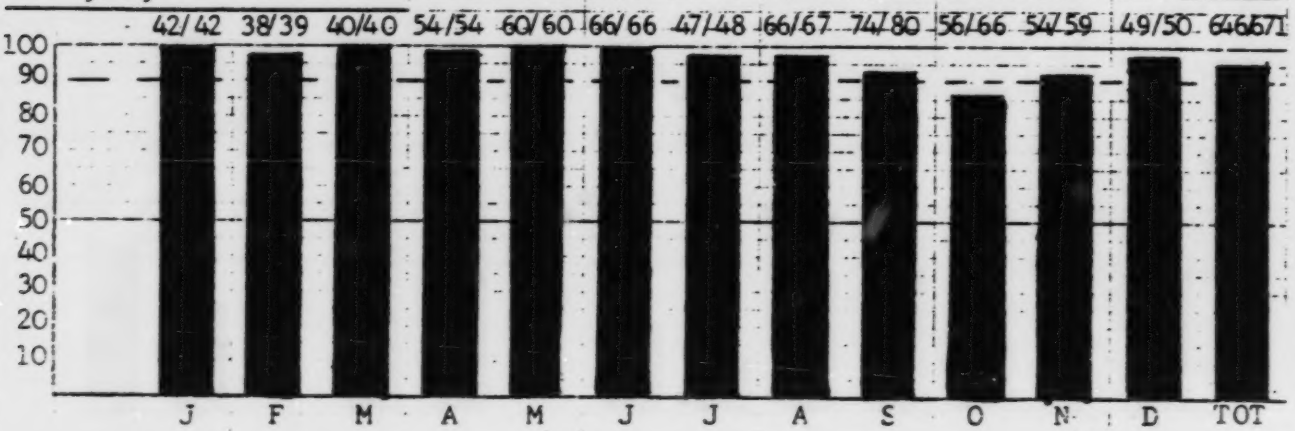
BACTERIOLOGICAL RESULTS

Point Edward



Steel Plant

Sydney



MONTH OF YEAR
1981

.../24

Cape Breton North HEALTH UNIT BACTERIOLOGICAL RESULTS

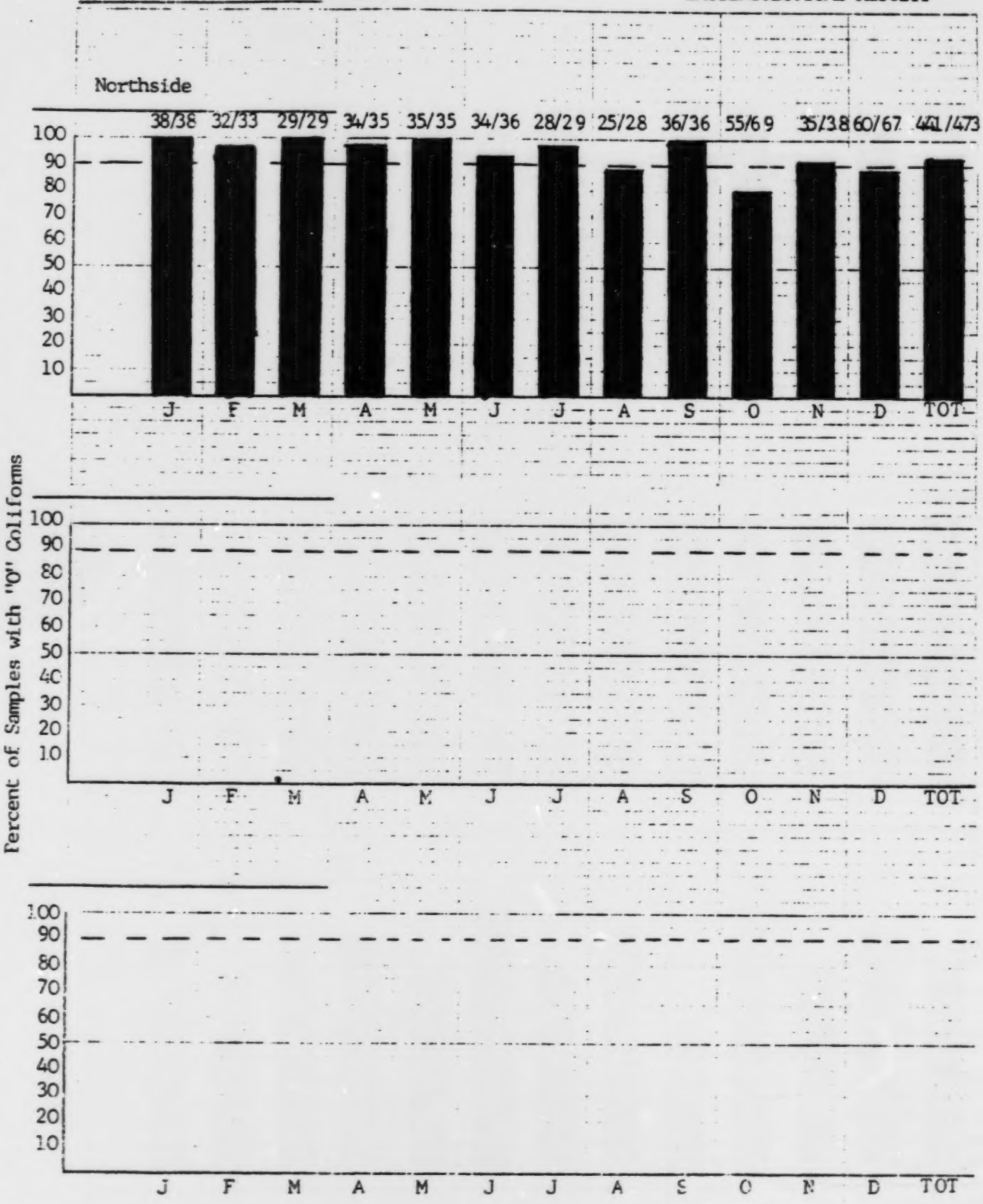

Northside
38/38 32/33 29/29 34/35 35/35 34/36 28/29 25/28 36/36 55/69 35/38 60/67 441/473
100
90
80
70
60
50
40
30
20
10
J F M A M J J A S O N D TOT
Percent of Samples with '0' Coliforms
J F M A M J J A S O N D TOT
J F M A M J J A S O N D TOT
MONTH OF YEAR
1981

TABLE 2

RESULTS OF LABORATORY EXAMINATIONS OF
MUNICIPAL WATER SUPPLIES

CAPE BRETON SOUTH HEALTH UNIT

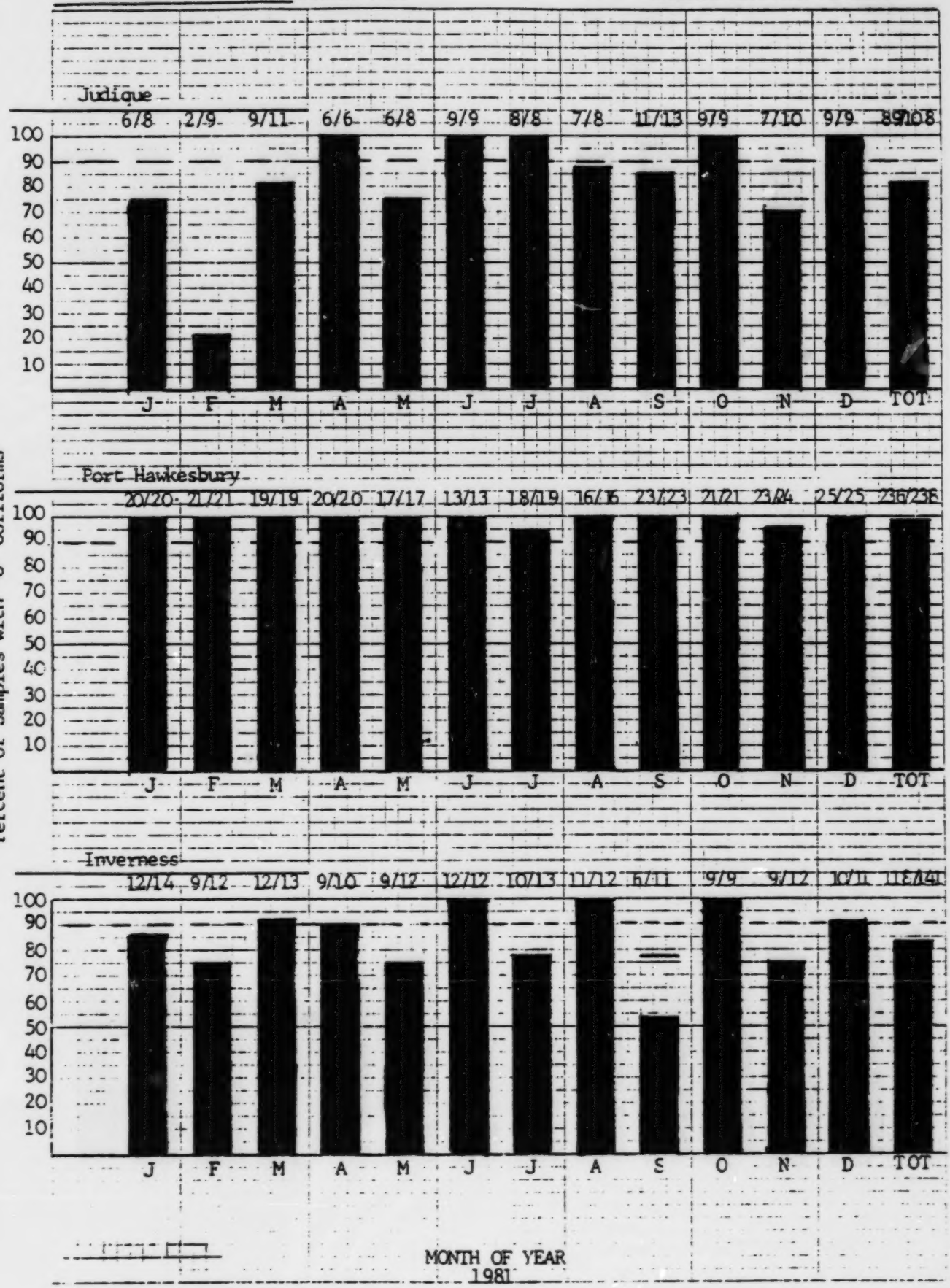
1981

MUNICIPALITY	NUMBER OF SAMPLES TAKEN	NEGATIVE FOR COLIFORM ORGANISMS	
		NO.	%
Judique	108	89	82.4
Port Hood	149	148	99.3
Mabou	142	94	66.2
Inverness	141	118	83.7
Port Hawkesbury *	238	236	99.2
Orangedale **	75	50	66.7
St. Peter's	124	118	95.2
Louisdale	133	129	97.0
Arichat	122	108	88.5
Donkin	107	86	80.4
Birch Cove	86	81	94.2
Clace Bay *	328	311	94.8
Dominion *	57	50	87.7
Reserve *	51	48	94.1
New Waterford *	237	226	95.4
Sydney River	147	143	98.0
Louisbourg	171	157	91.8
Grand Lake Road	48	47	97.9

* Fluoridated
** Unchlorinated

.../26

CAPE BRETON SOUTH HEALTH UNIT BACTERIOLOGICAL RESULTS

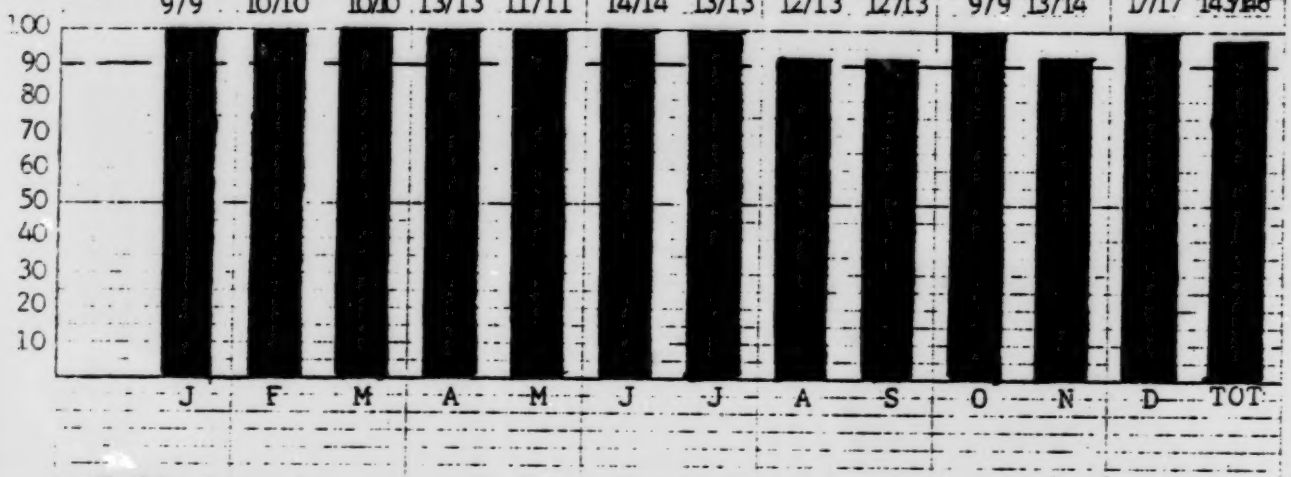


.../27

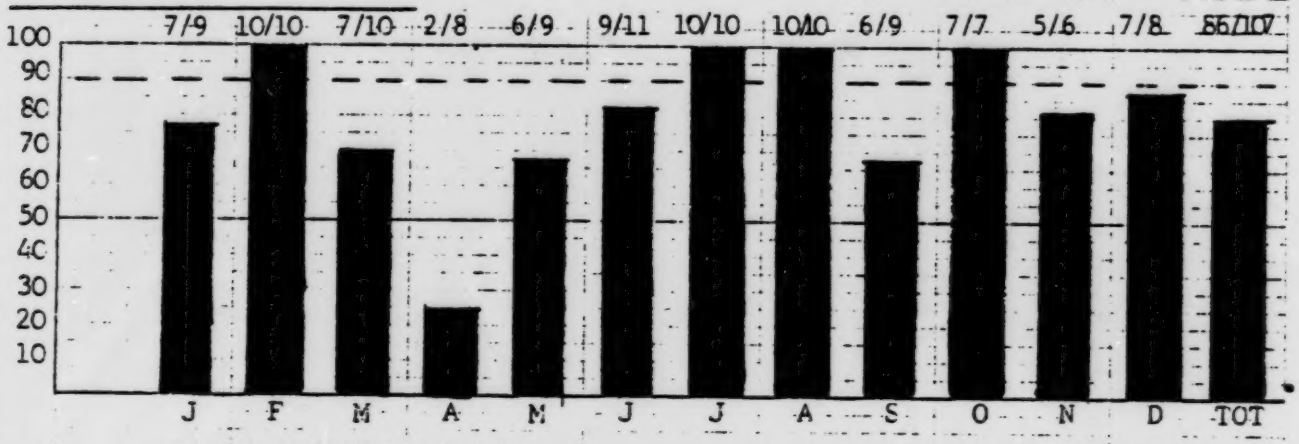
CAPE BRETON SOUTH HEALTH UNIT

BACTERIOLOGICAL RESULTS

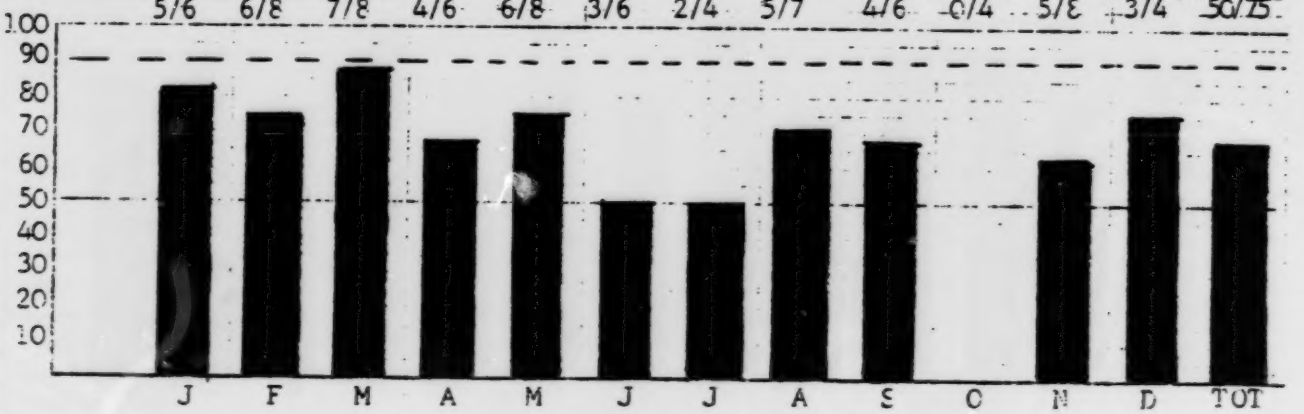
Sydney River



Donkin



Orangedale

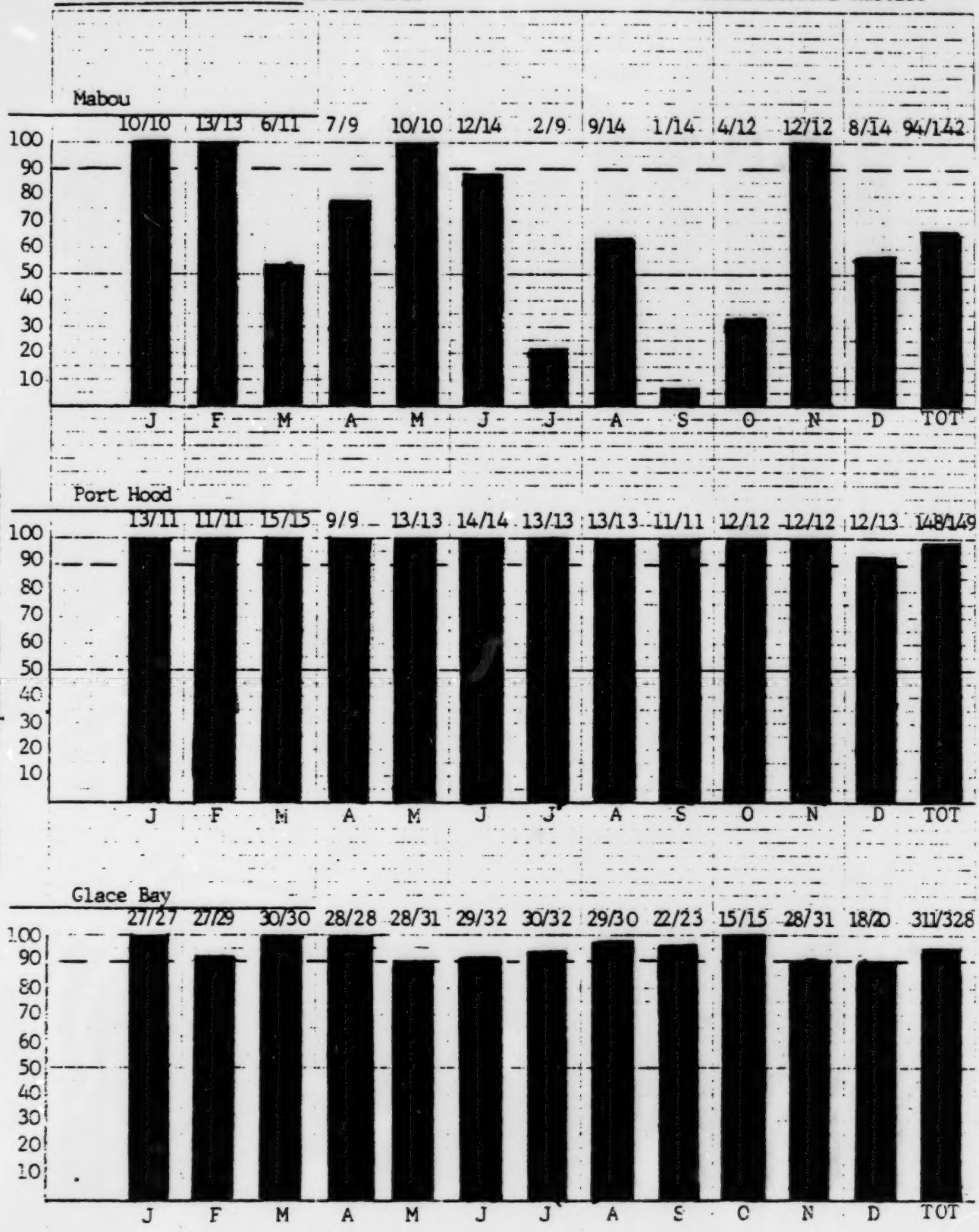


MONTH OF YEAR

1981

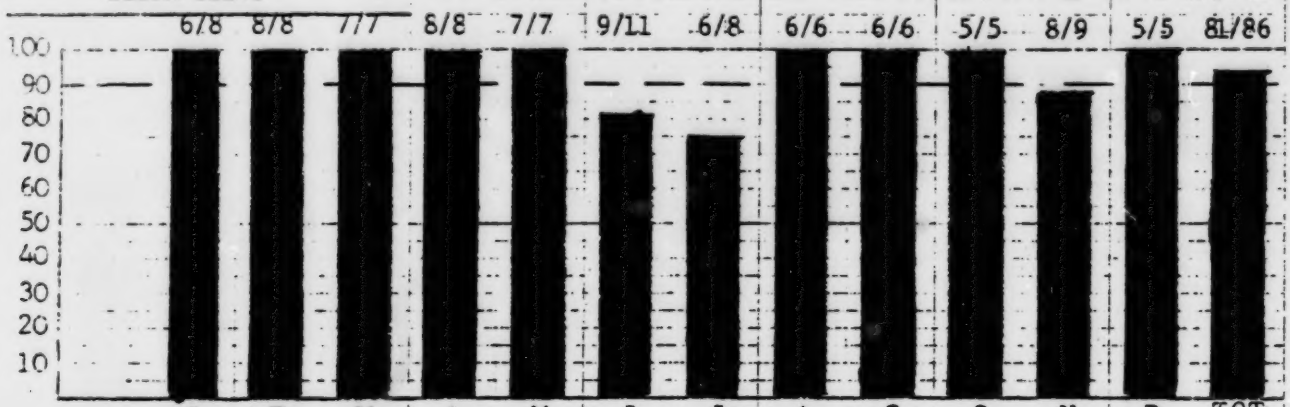
.../28

CAPE BRETON SOUTH HEALTH UNIT BACTERIOLOGICAL RESULTS

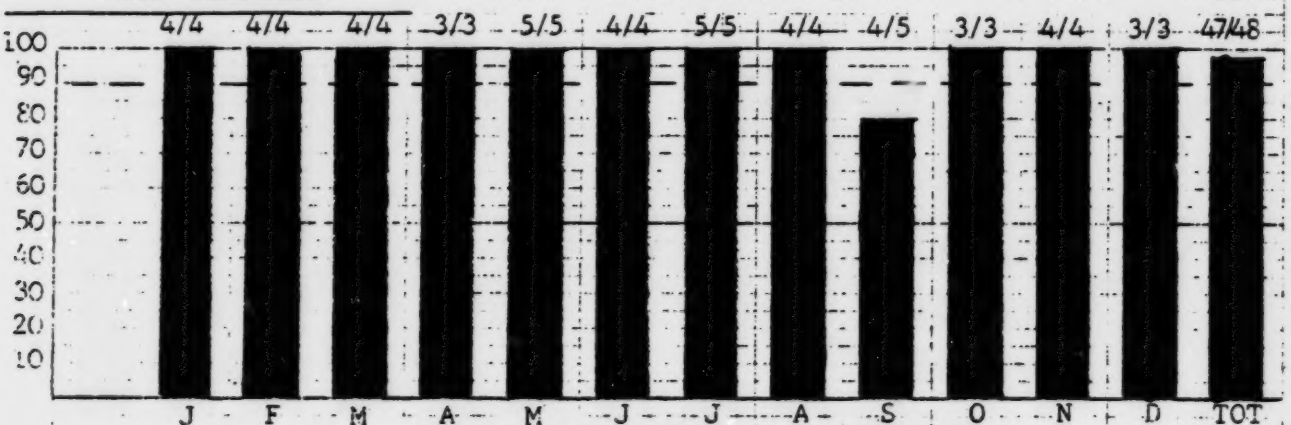


CAPE BRETON SOUTH HEALTH UNIT — BACTERIOLOGICAL RESULTS

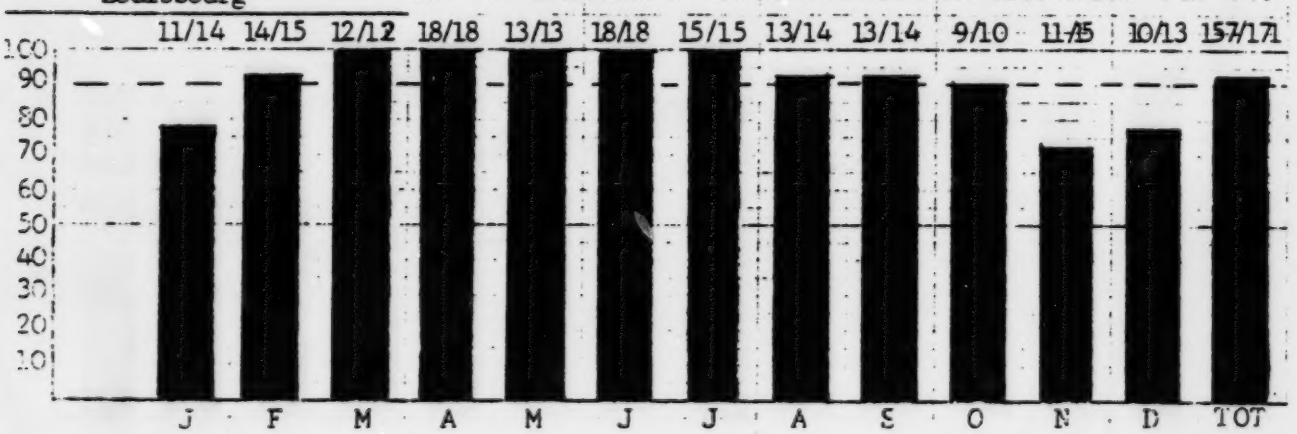
Birch Grove



Grand Lake Road.



Louisbourg

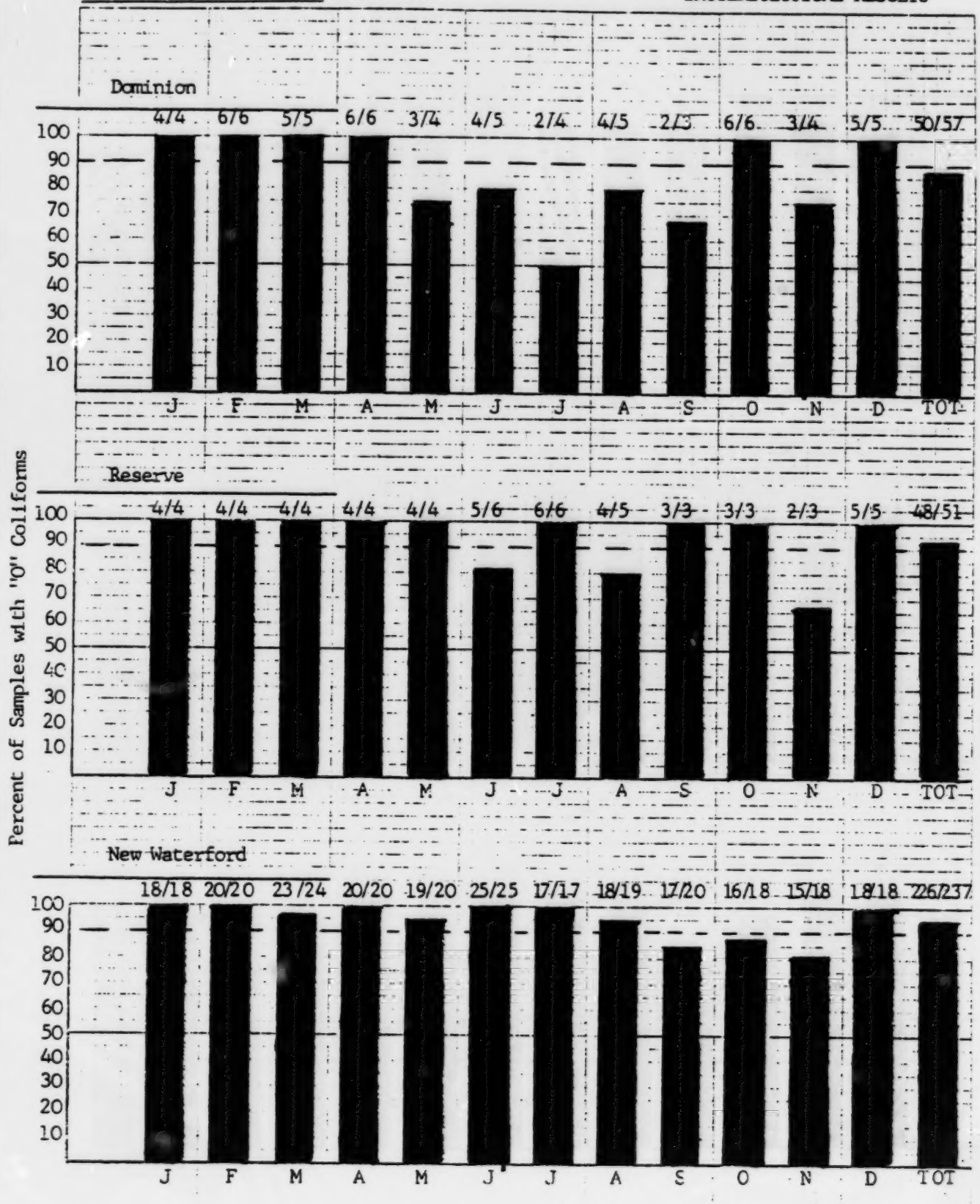


MONTH OF YEAR
1981

.../30

CAPE BRETON SOUTH HEALTH UNIT

BACTERIOLOGICAL RESULTS



Percent of Samples with "0" Coliforms

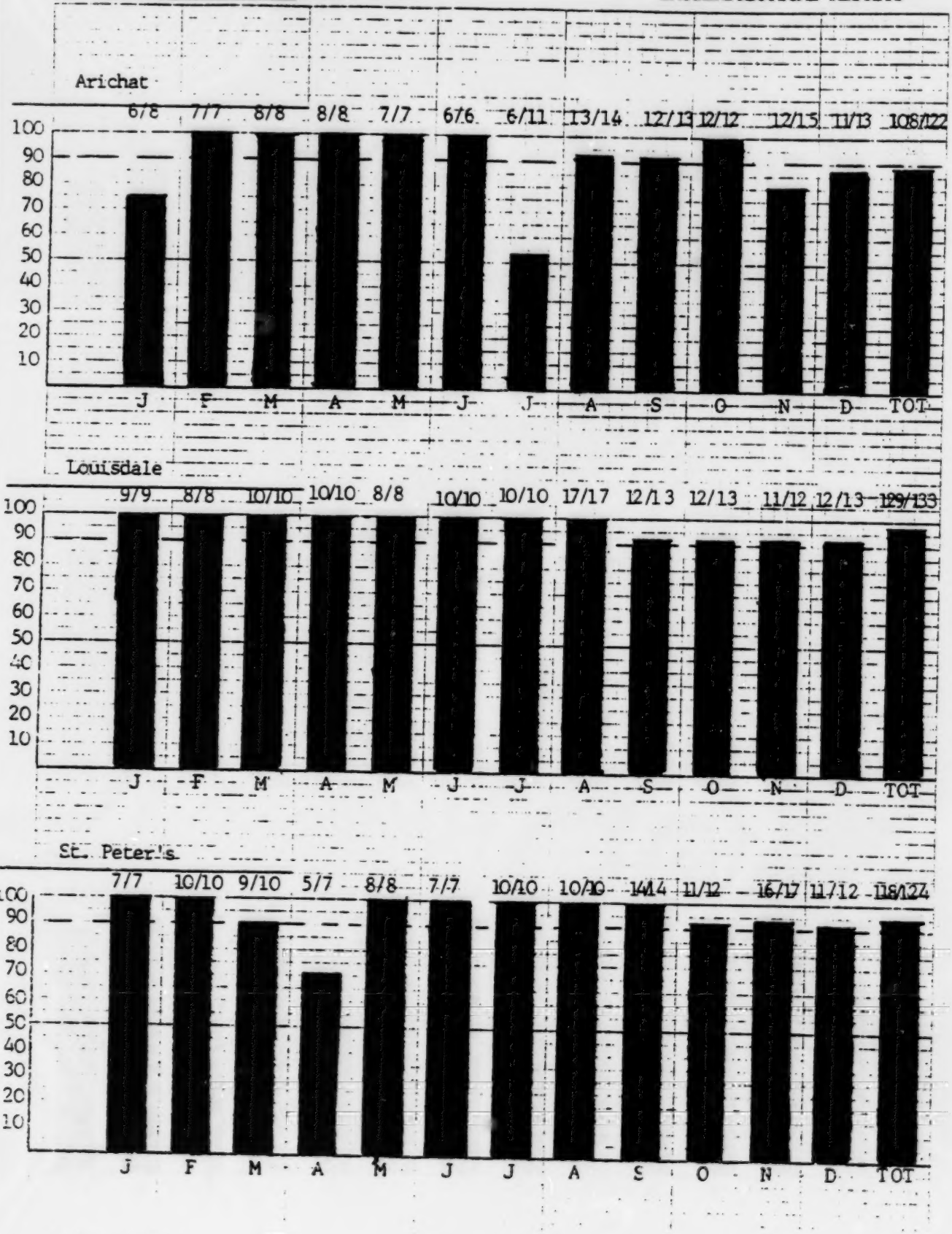
MONTH OF YEAR

1981

.../31

CAPE BRETON SOUTH HEALTH UNIT

BACTERIOLOGICAL RESULTS



MONTH OF YEAR
1981

.../32

TABLE 2

RESULTS OF LABORATORY EXAMINATIONS OF
MUNICIPAL WATER SUPPLIES

COBEQUID HEALTH UNIT

1981

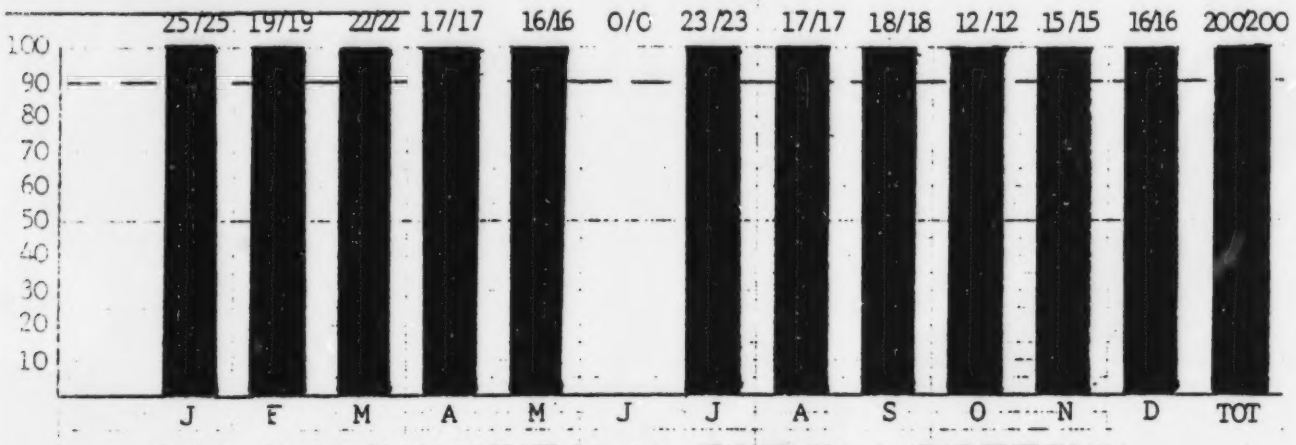
MUNICIPALITY	NUMBER OF SAMPLES TAKEN	NEGATIVE FOR COLIFORM ORGANISMS	
		NO.	%
Truro	250	241	96
Tatamagouche	173	142	82
Stewiacke	168	153	91
Amherst	200	200	100
Parrsboro	174	164	94
Springhill	191	179	94
Oxford	114	101	89

* Fluoridated

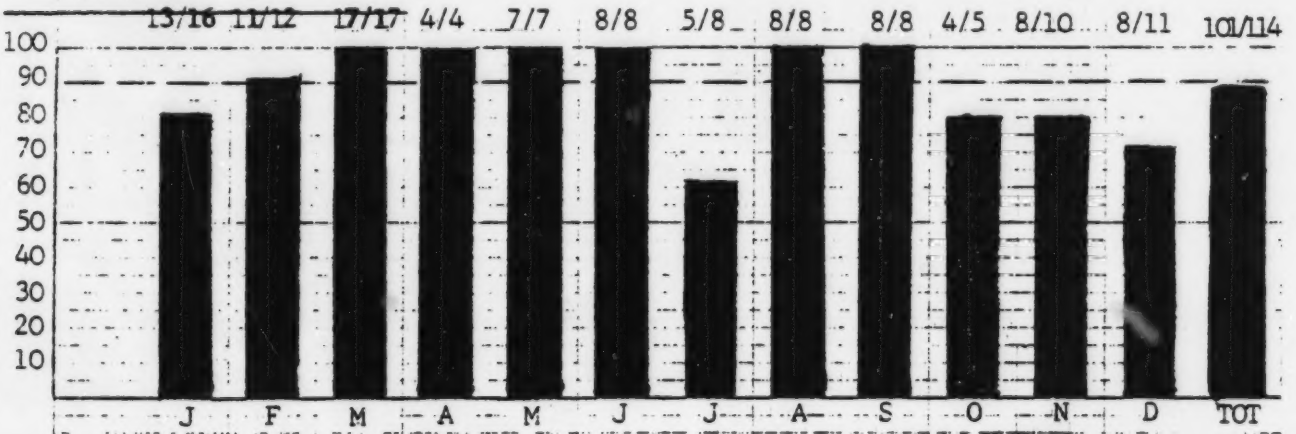
.../33

COBEQUID HEALTH UNIT BACTERIOLOGICAL RESULTS

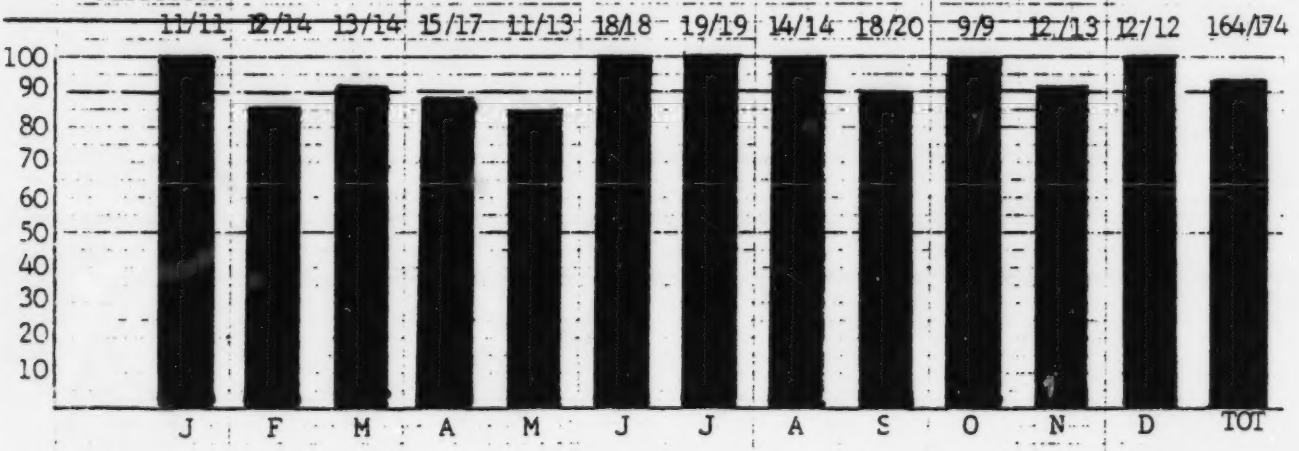
Amherst



Oxford



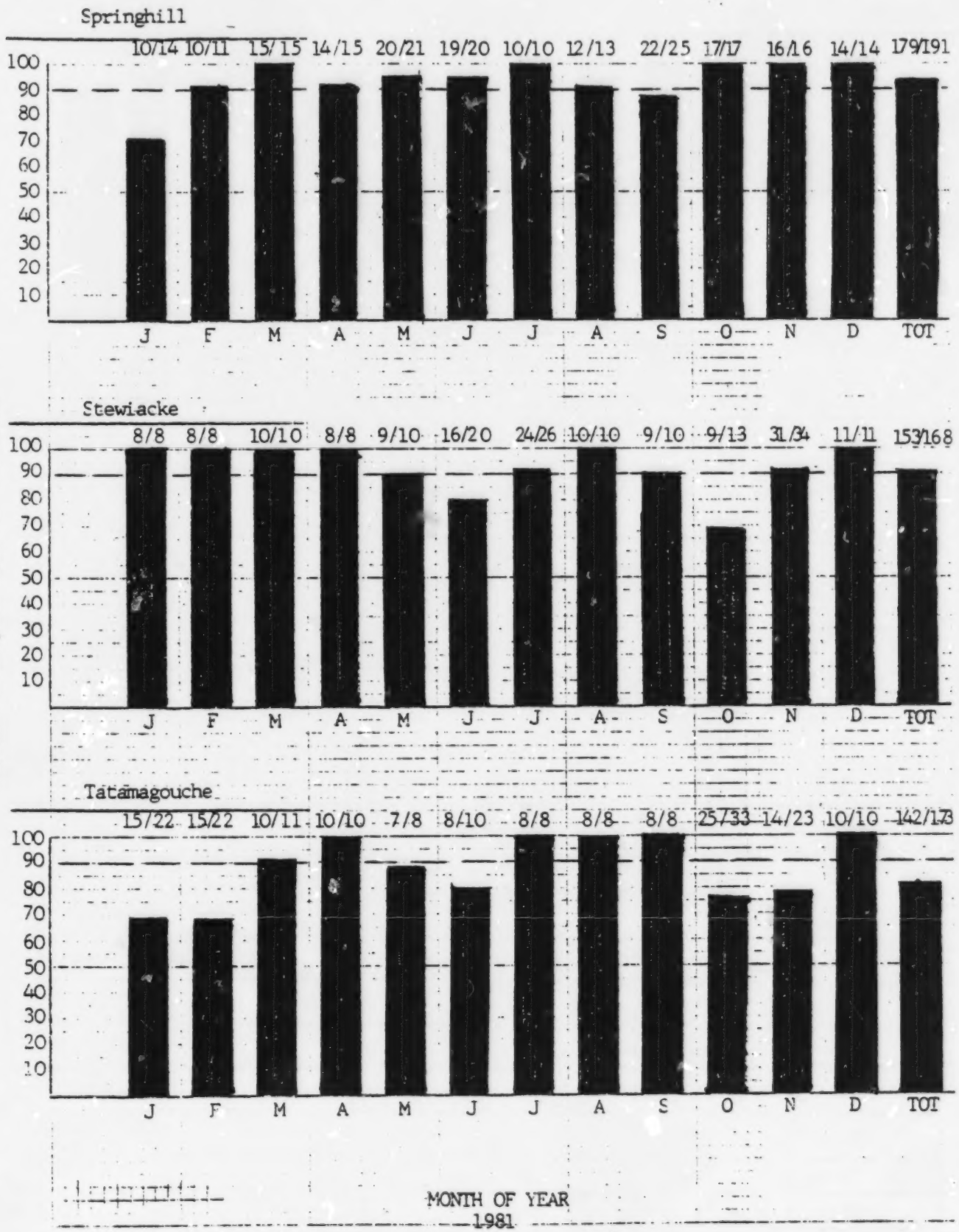
Parrsboro



MONTH OF YEAR
1981

.../34

COBEQUID HEALTH UNIT BACTERIOLOGICAL RESULTS



.../35

Truro

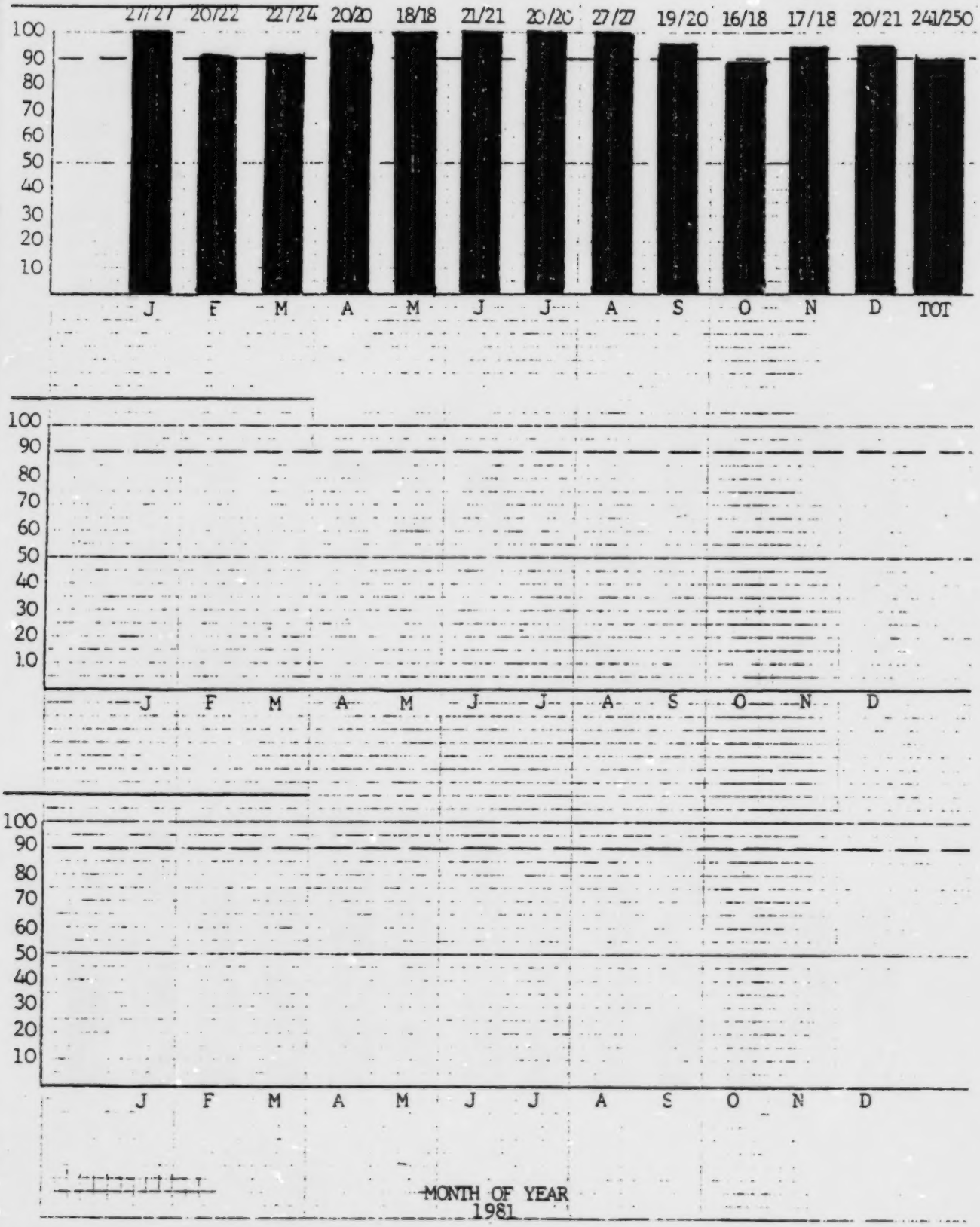

27/27 20/22 22/24 20/20 18/18 21/21 20/20 27/27 19/20 16/18 17/18 20/21 241/250
100
90
80
70
60
50
40
30
20
10
J F M A M J J A S O N D TOT
100
90
80
70
60
50
40
30
20
10
J F M A M J J A S O N D
100
90
80
70
60
50
40
30
20
10
J F M A M J J A S O N D
MONTH OF YEAR
1981

TABLE 2

RESULTS OF LABORATORY EXAMINATIONS OF
MUNICIPAL WATER SUPPLIES

FUNDY HEALTH UNIT

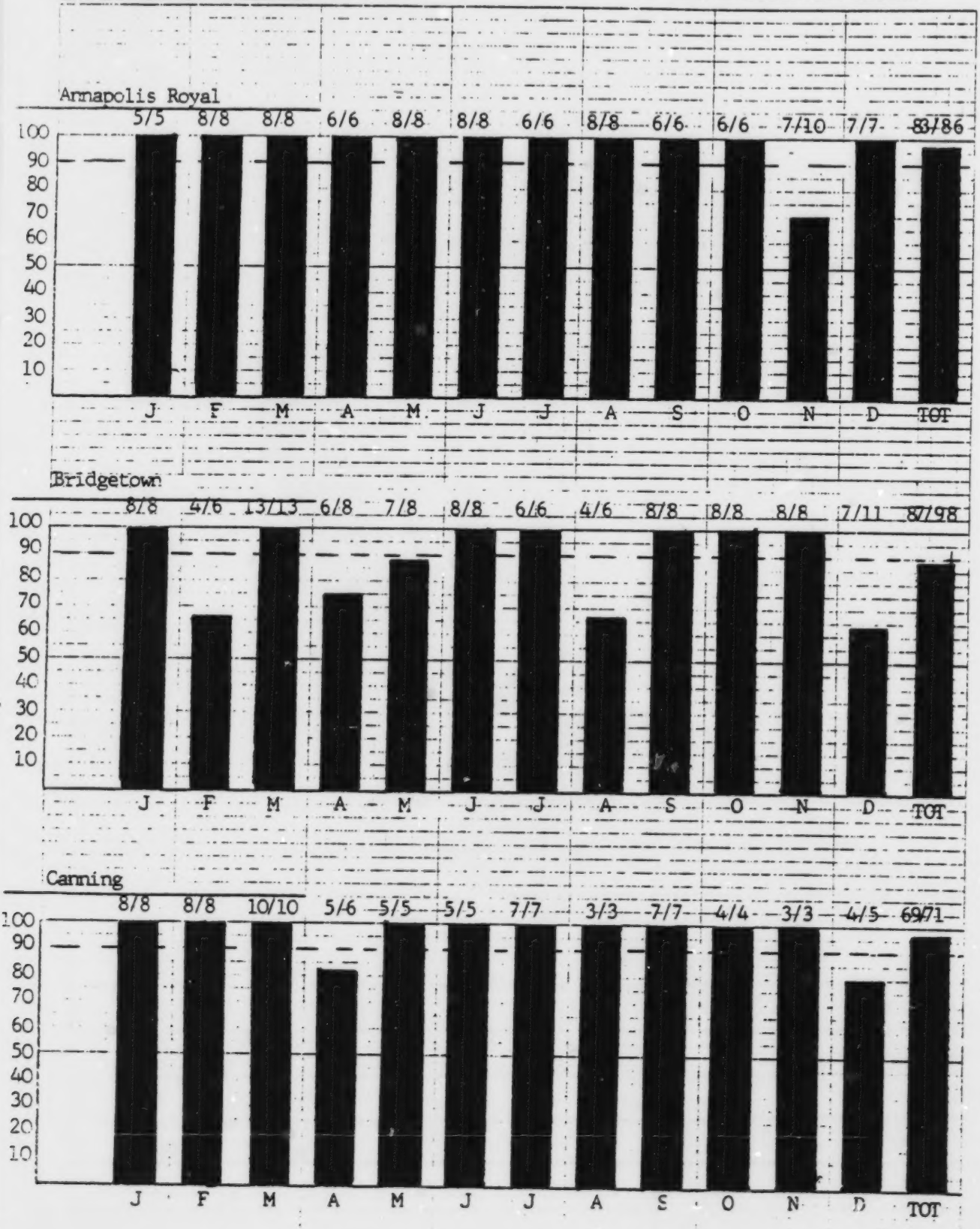
1981

MUNICIPALITY	NUMBER OF SAMPLES TAKEN	NEGATIVE FOR COLIFORM ORGANISMS	
		NO.	%
Annapolis Royal	86	83	97
Bridgetown	98	87	89
Canning **	71	69	97
Elmsdale	45	41	91
Enfield *	47	42	89
Falmouth	73	67	92
Granville Ferry **	52	52	100
Greenwood Village	46	46	100
Hantsport *	39	39	100
Kentville *	162	148	91
Lantz	61	57	93
Lawrencetown	76	72	95
Margaretsville	45	42	93
Middleton *	99	98	99
New Minas	39	39	100
Fort Williams **	57	57	100
Shubenacadie	51	46	90
Windsor *	117	104	89
Wolfville *	81	79	98

* Fluoridated
** Unchlorinated

.../37

FUNDY HEALTH UNIT BACTERIOLOGICAL RESULTS

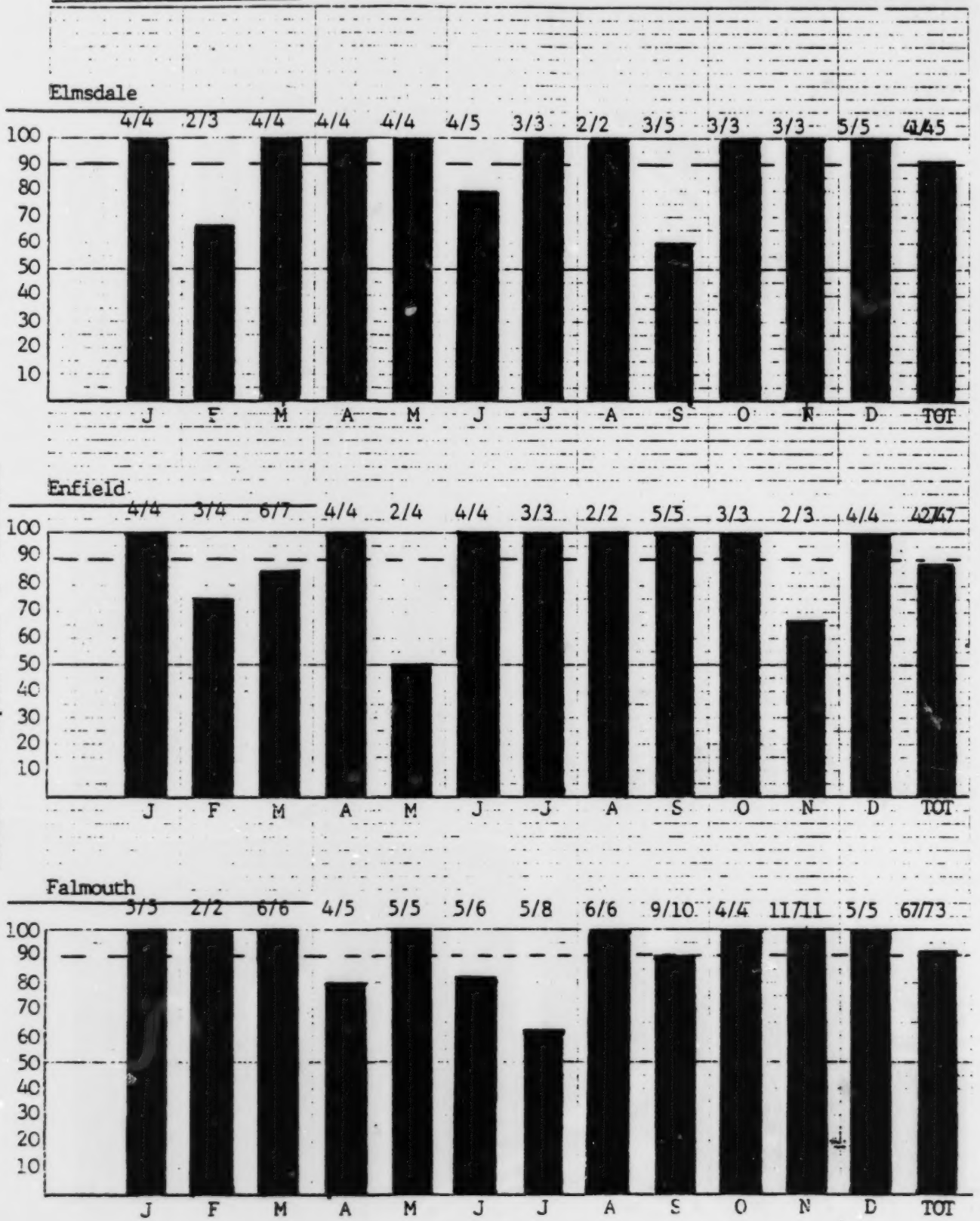


MONTH OF YEAR

1981

.../30

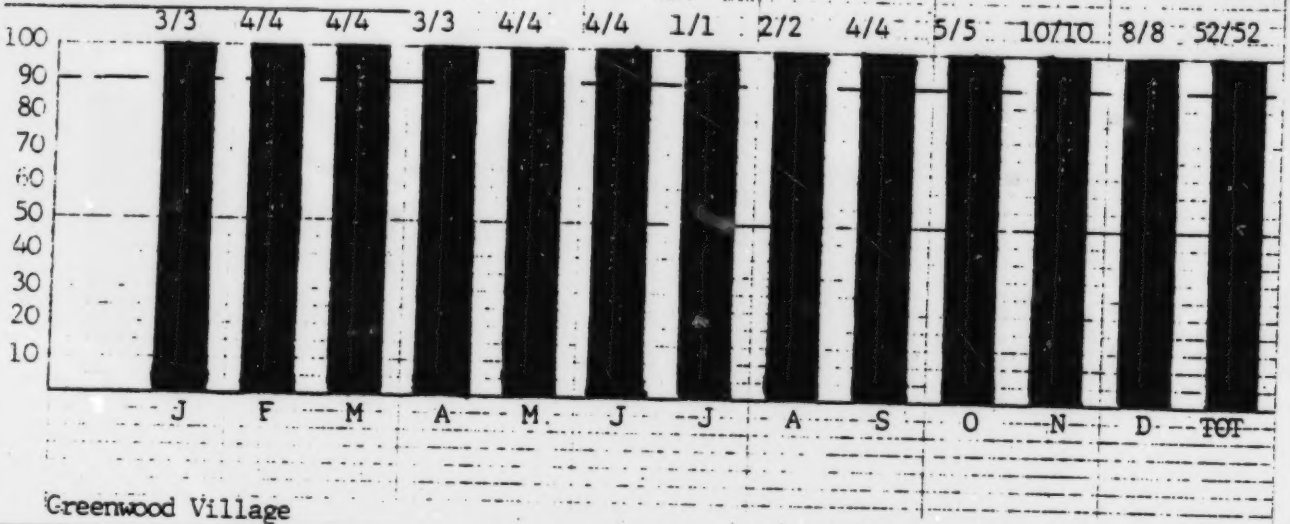
FUNDY HEALTH UNIT BACTERIOLOGICAL RESULTS



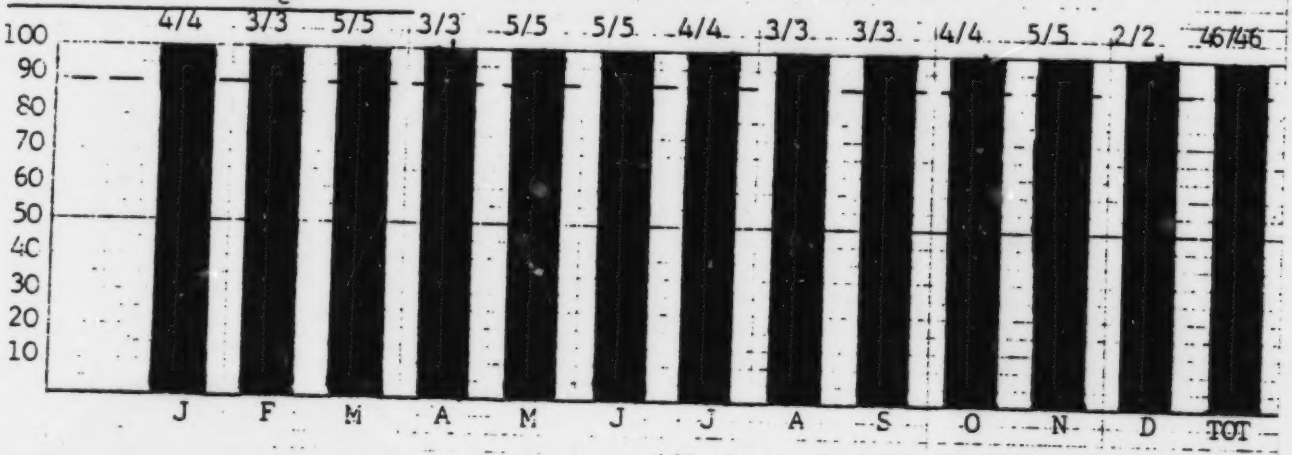
FUNDY HEALTH UNIT

BACTERIOLOGICAL RESULTS

Granville Ferry



Greenwood Village

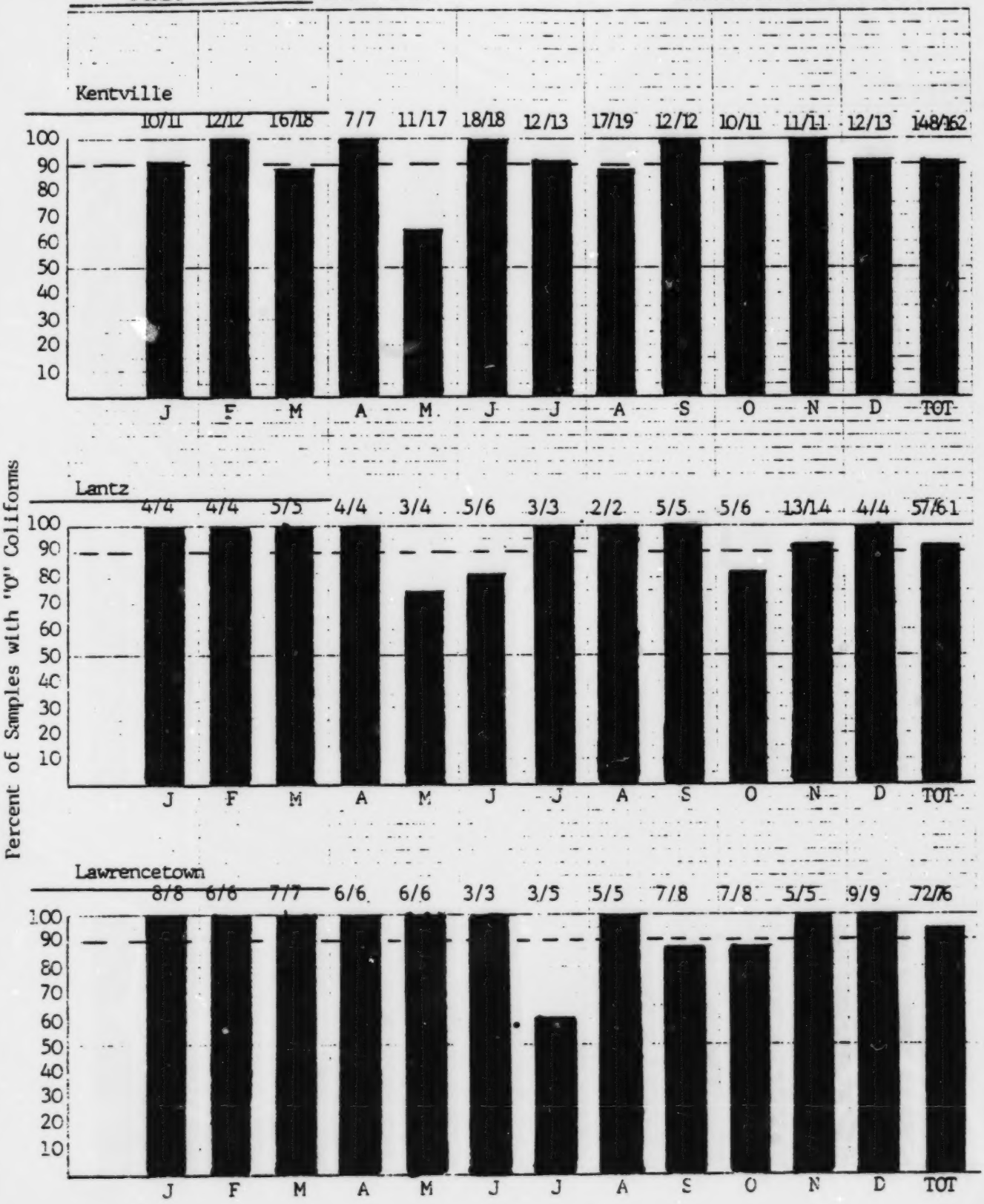


Hantsport

MONTH OF YEAR
1981

.../40

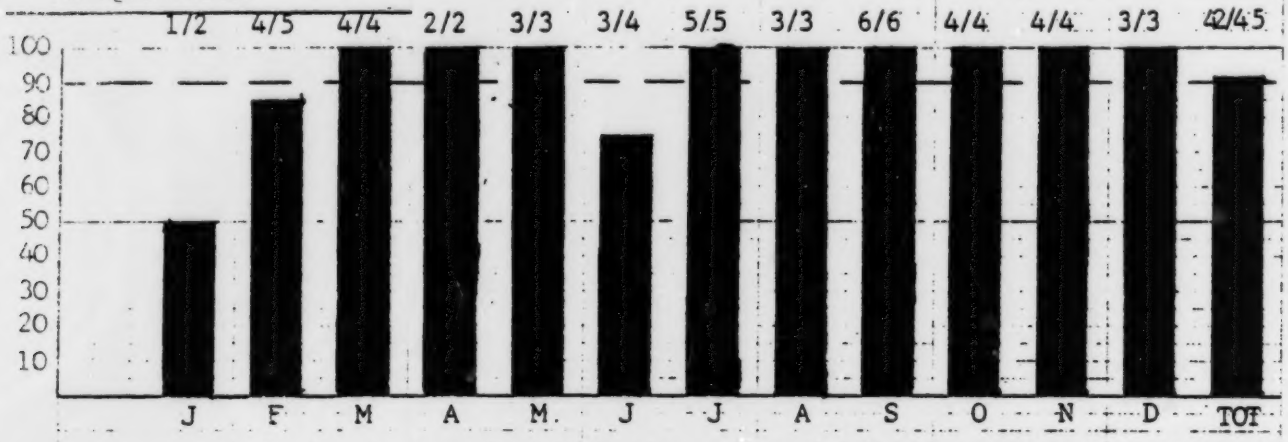
FUNDY HEALTH UNIT BACTERIOLOGICAL RESULTS



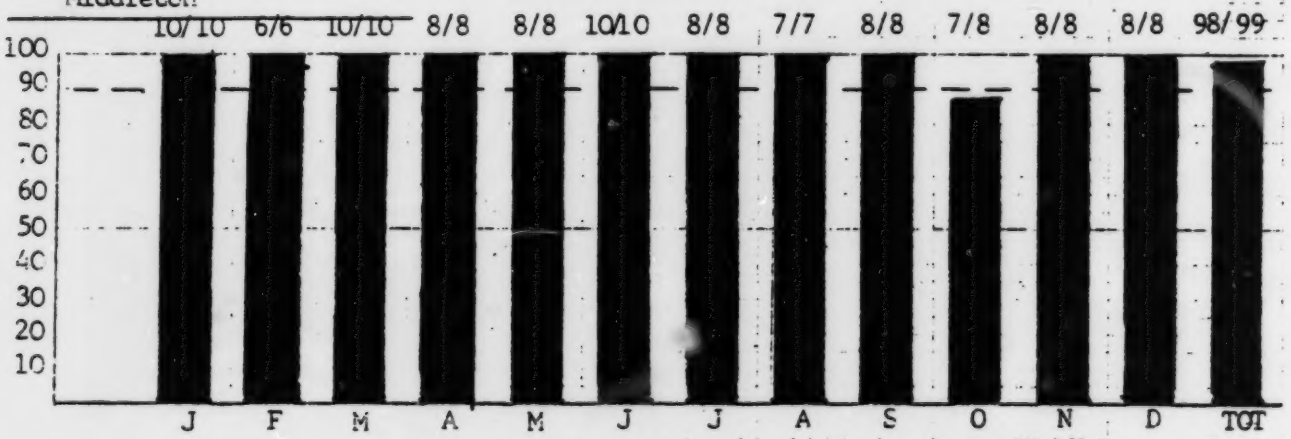
.../41

FUNDY HEALTH UNIT BACTERIOLOGICAL RESULTS

Margaretville



Middleton



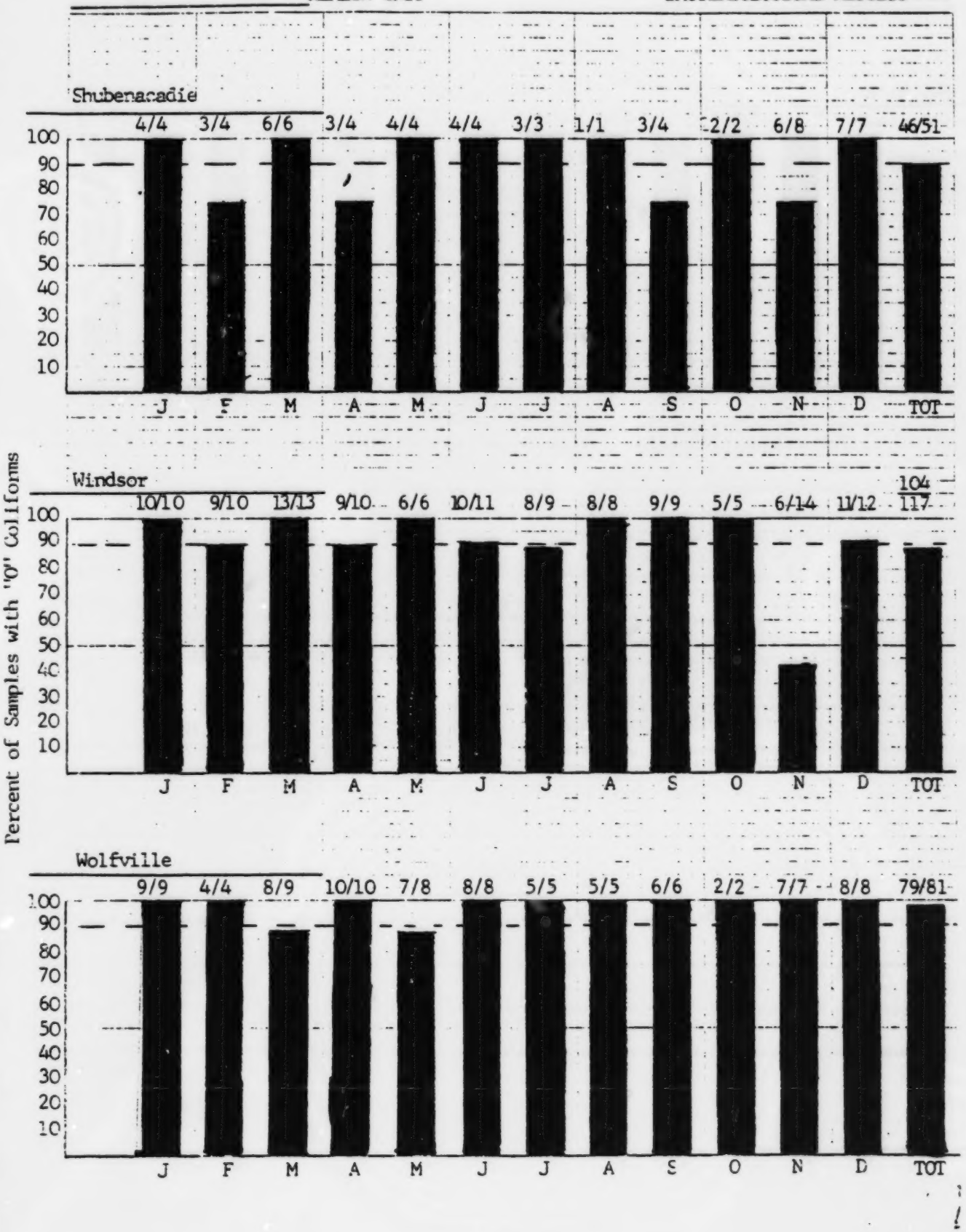
Port Williams

MONTH OF YEAR
1981

.../42

HEALTH UNIT

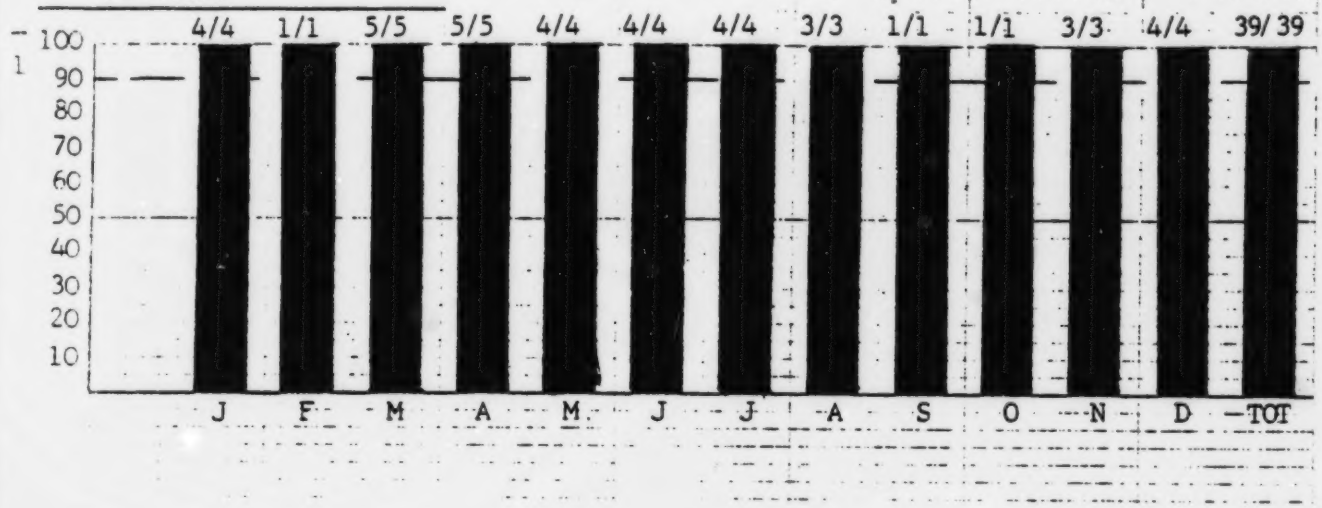
BACTERIOLOGICAL RESULTS

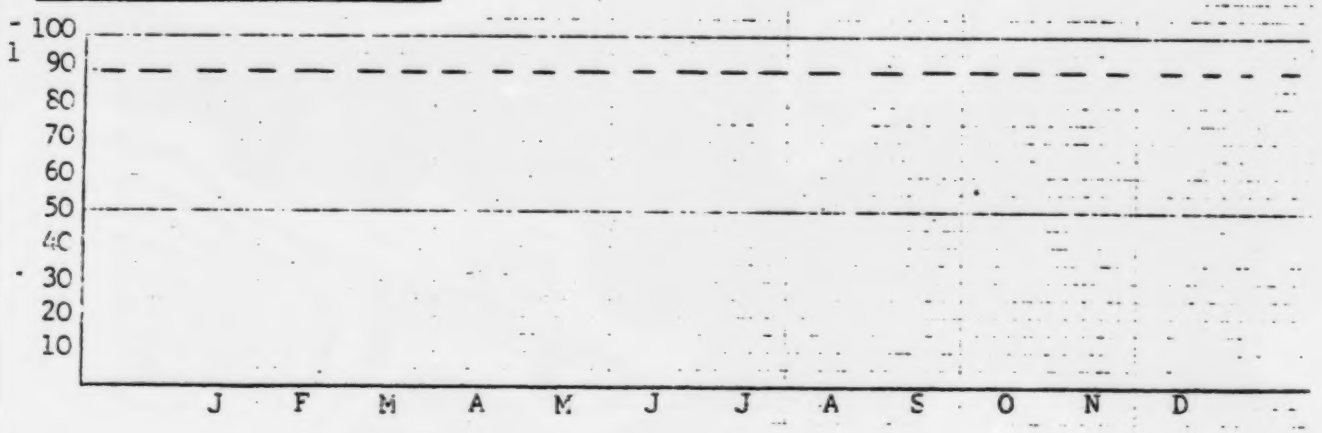


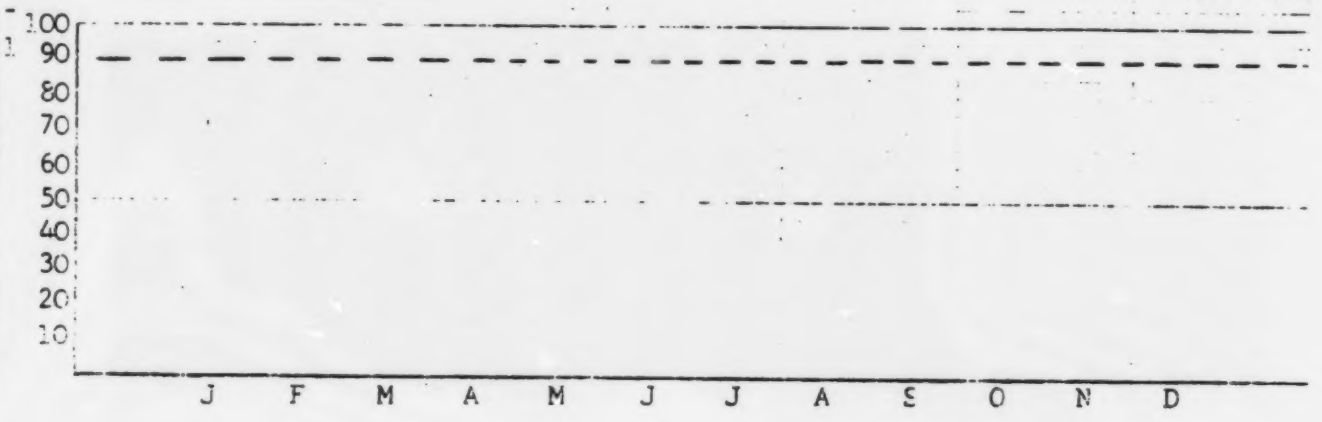
.../43

FUNDY HEALTH UNIT BACTERIOLOGICAL RESULTS

New Minas







MONTH OF YEAR
1981

.../44

TABLE 2

RESULTS OF LABORATORY EXAMINATIONS OF
MUNICIPAL WATER SUPPLIES

LUNENBURG - QUEENS HEALTH UNIT

1981

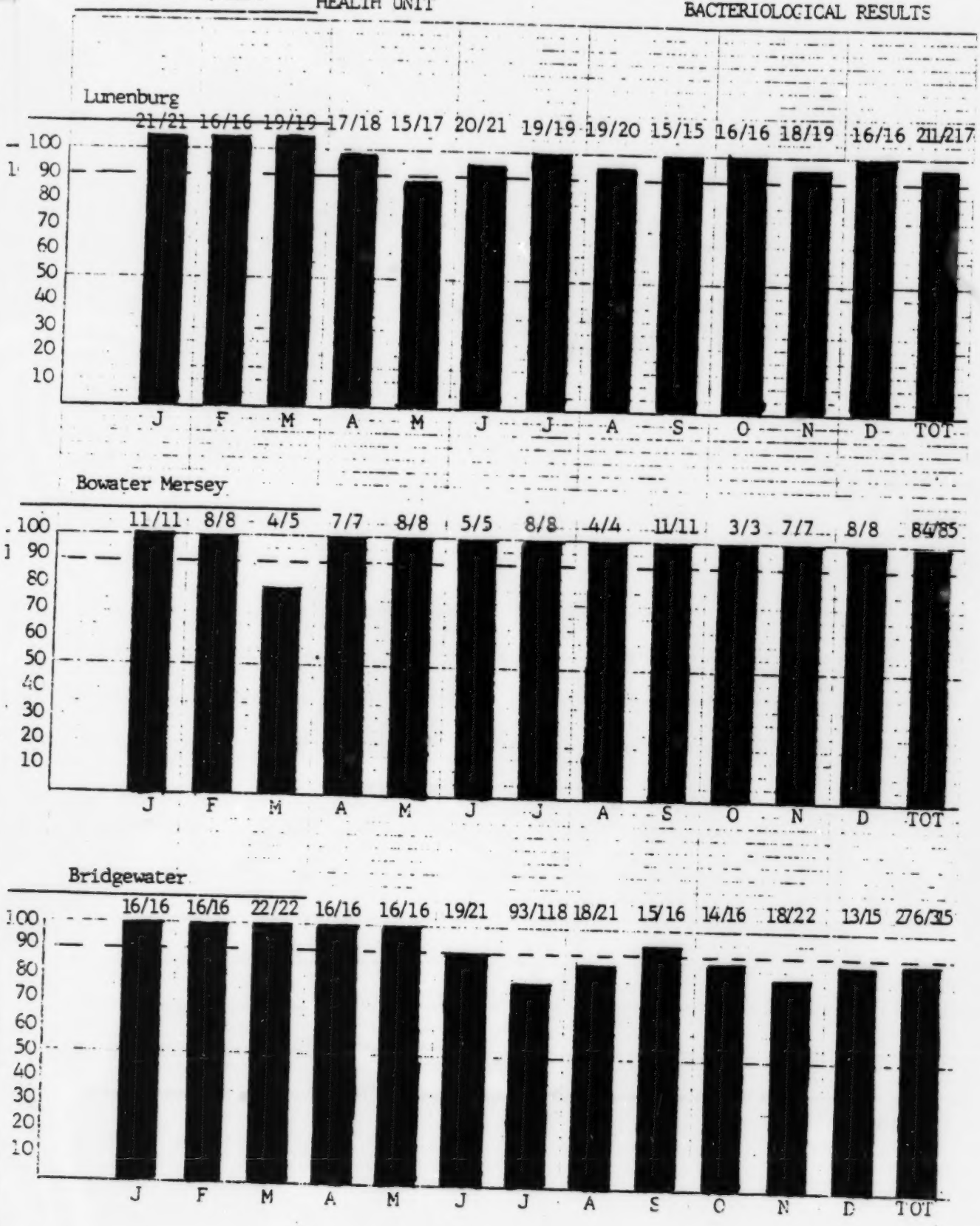
MUNICIPALITY	NUMBER OF SAMPLES TAKEN	NEGATIVE FOR COLIFORM ORGANISMS	
		NO.	%
Bridgewater	315	276	88
Liverpool *	205	181	88
Lunenburg *	217	211	97
Mahone Bay	178	161	90
Bowater Mersey	85	84	99

* Fluoridated

.../45

LUNENBURG-QUEENS HEALTH UNIT

BACTERIOLOGICAL RESULTS



MONTH OF YEAR
1981

.../46

Lunenburg-Queens HEALTH UNIT BACTERIOLOGICAL RESULTS

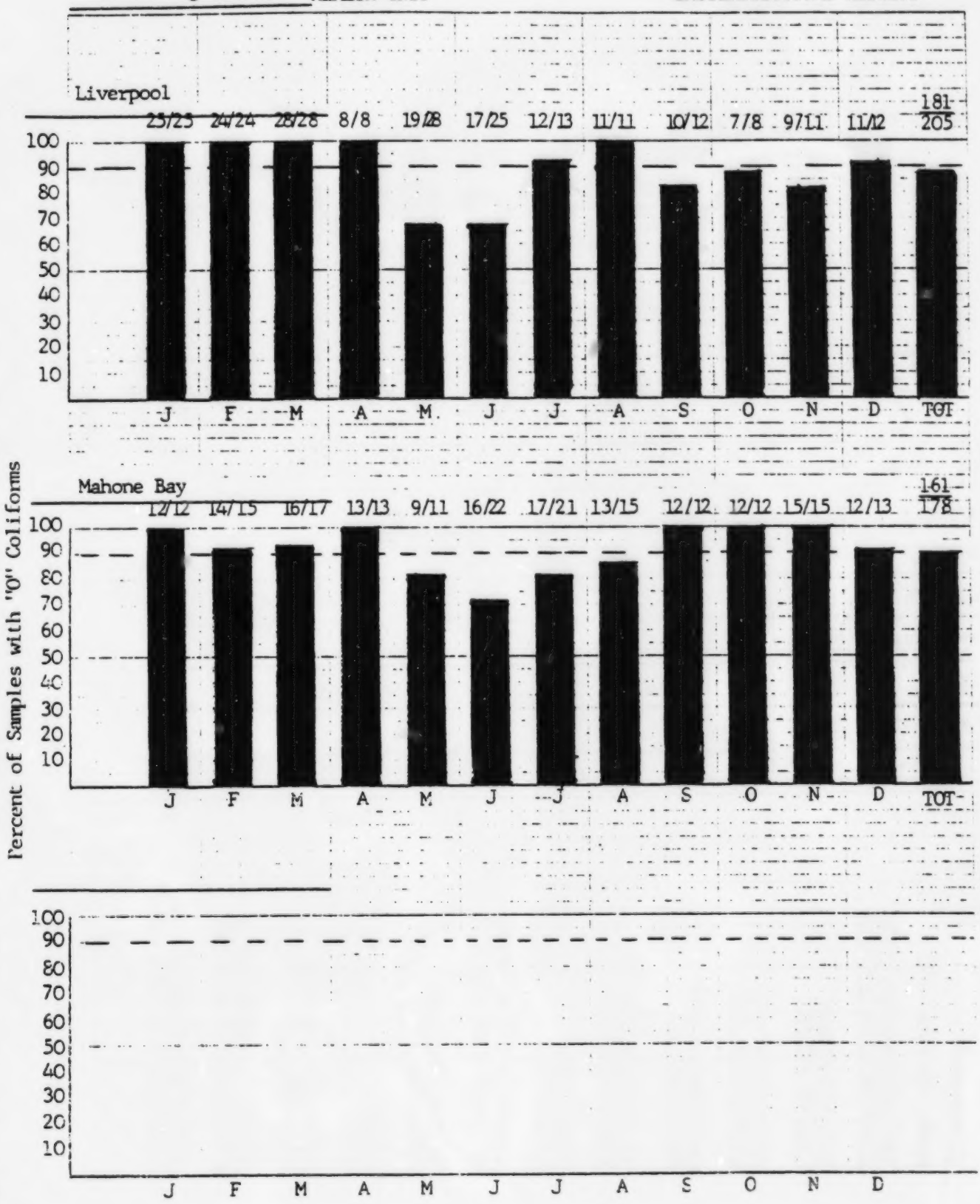


TABLE 2

RESULTS OF LABORATORY EXAMINATIONS OF
MUNICIPAL WATER SUPPLIES

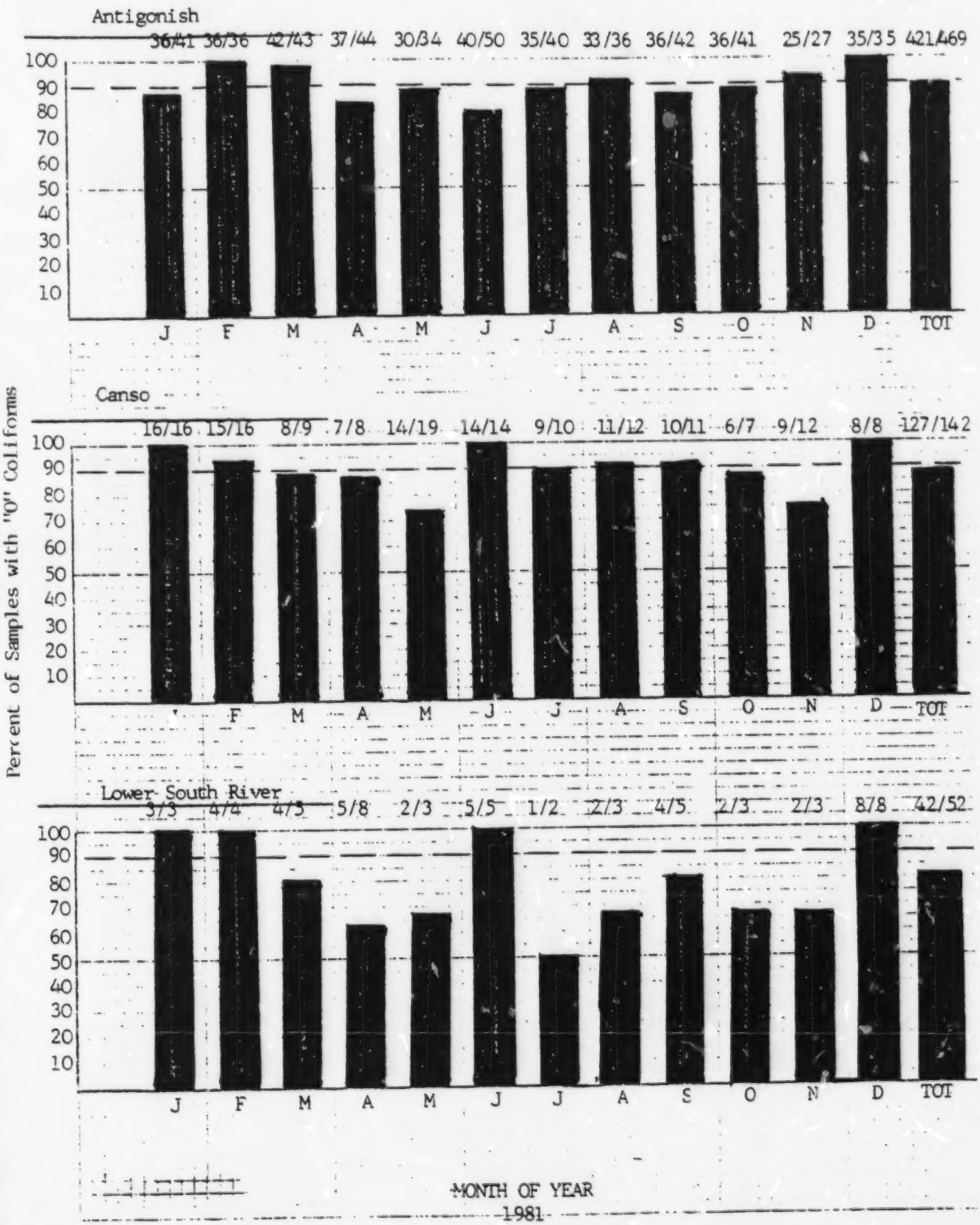
NORTHUMBERLAND HEALTH UNIT

1981

MUNICIPALITY	NUMBER OF SAMPLES TAKEN	NEGATIVE FOR COLIFORM ORGANISMS	
		NO.	%
Antigonish	469	421	90
Canso	142	127	89
Lower South River	52	42	81
Mulgrave	152	145	95
New Clasgow *	242	233	96
Pictou	297	265	89
Sherbrooke	81	78	96
St. Andrews	133	100	75
Stellarton	213	192	90
Trenton	197	180	91
Westville	170	156	92

* Fluoridated

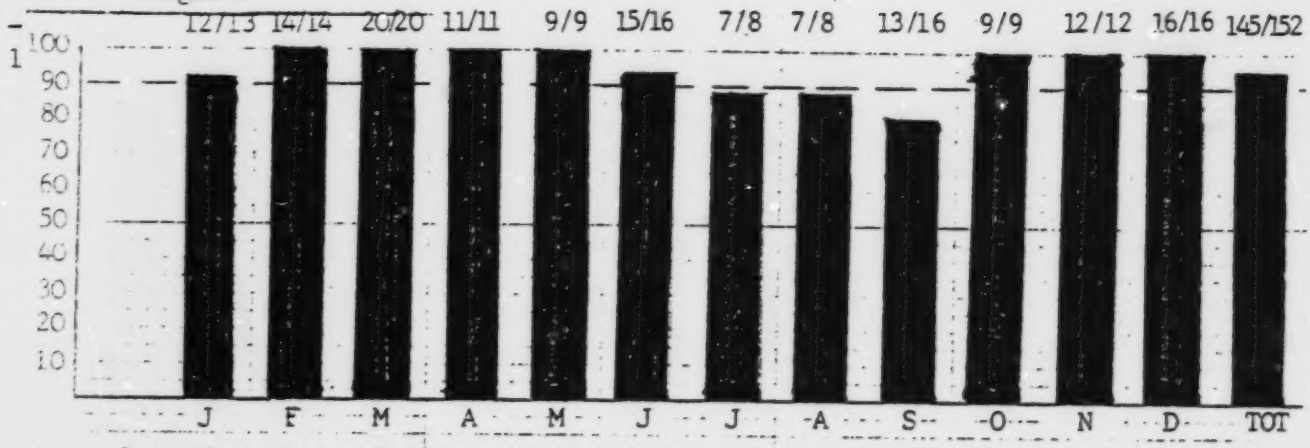
NORTHUMBERLAND HEALTH UNIT BACTERIOLOGICAL RESULTS



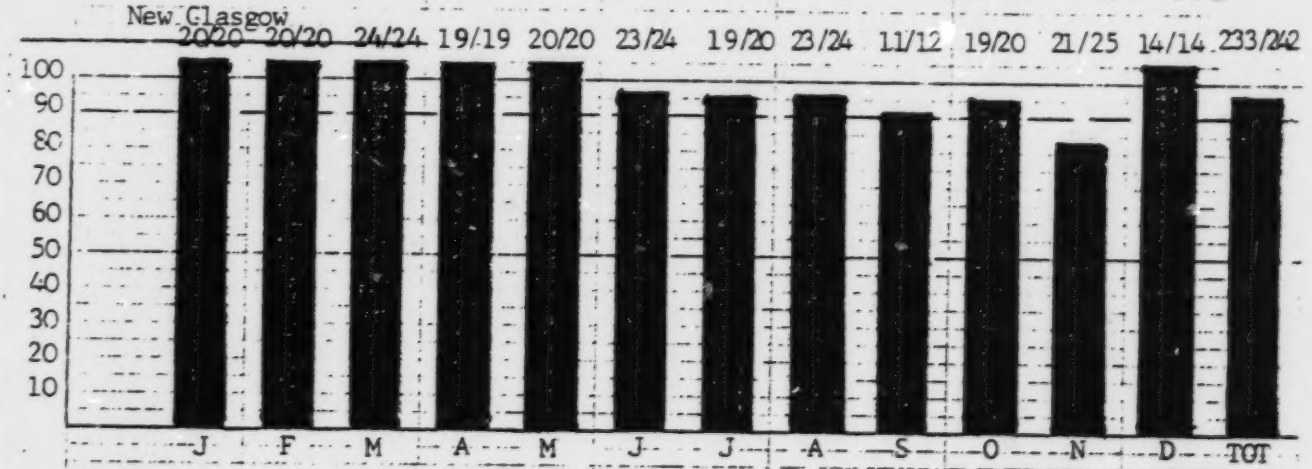
NORTHUMBERLAND HEALTH UNIT

BACTERIOLOGICAL RESULTS

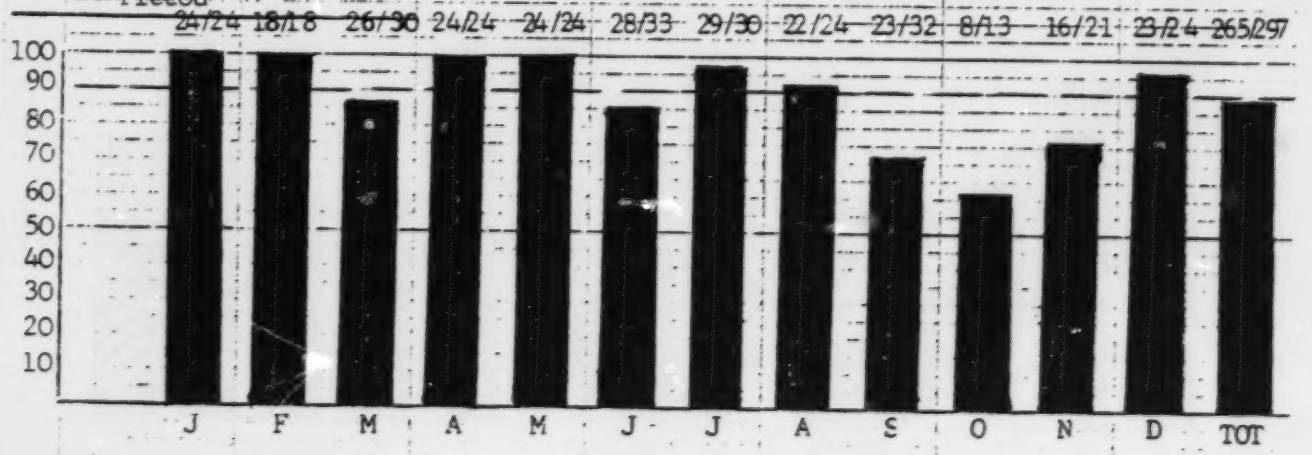
Mulgrave



New Glasgow



Pictou

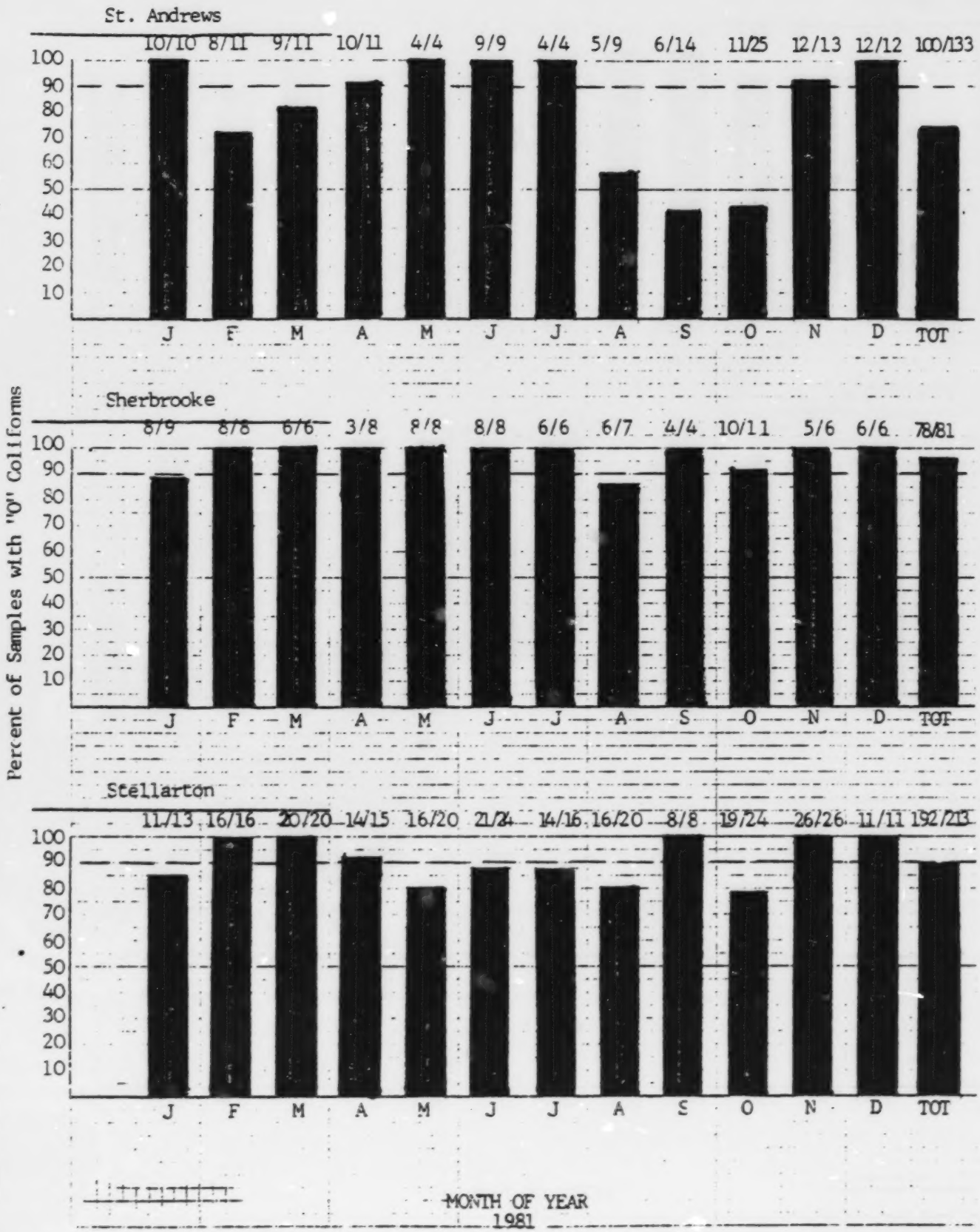


MONTH OF YEAR

1981

.../50

NORTHUMBERLAND HEALTH UNIT BACTERIOLOGICAL RESULTS



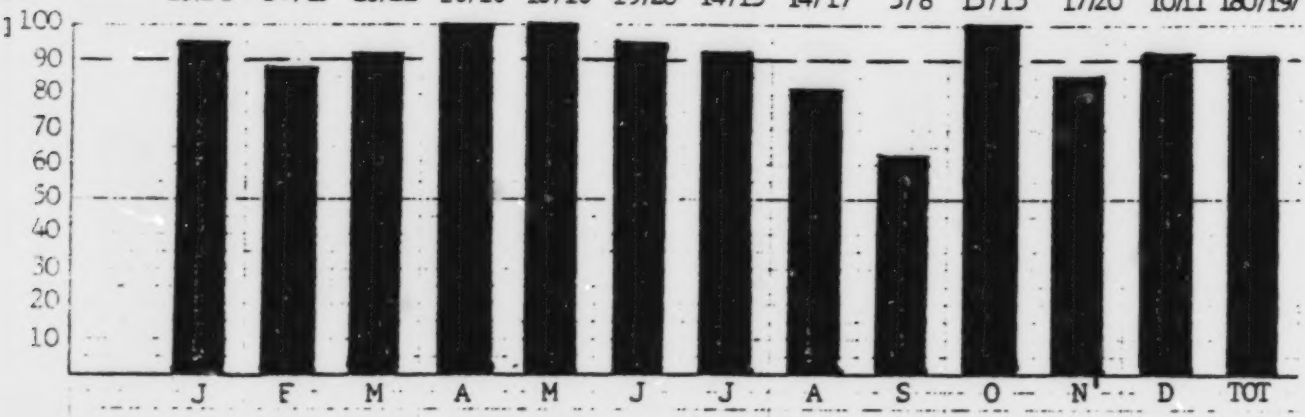
.../51

NORTHUMBERLAND HEALTH UNIT

BACTERIOLOGICAL RESULTS

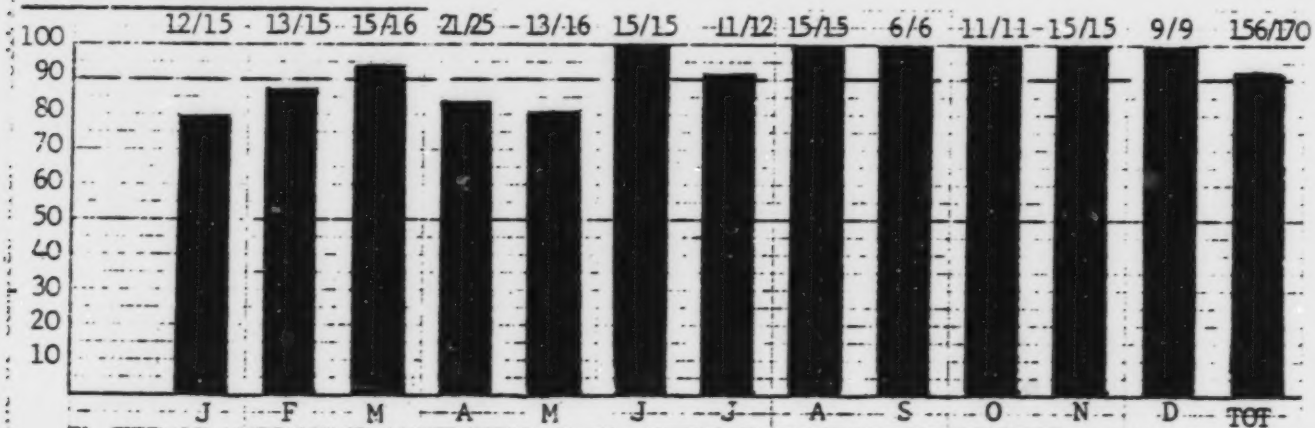
Trenton

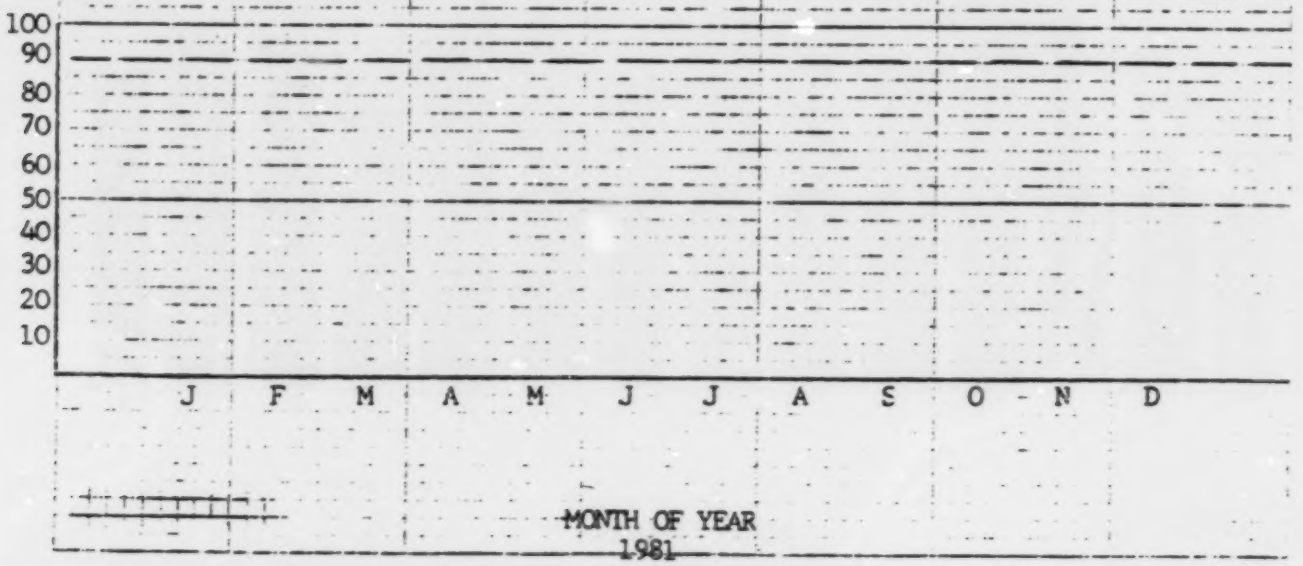
~~20/21~~ ~~14/16~~ ~~20/22~~ 16/16 16/16 19/20 14/15 14/17 5/8 15/15 17/20 10/11 180/197



Westville

12/15 13/15 15/16 21/25 13/16 15/15 11/12 15/15 6/6 11/11 15/15 9/9 156/170





.../52

TABLE 2

RESULTS OF LABORATORY EXAMINATIONS OF
MUNICIPAL WATER SUPPLIES

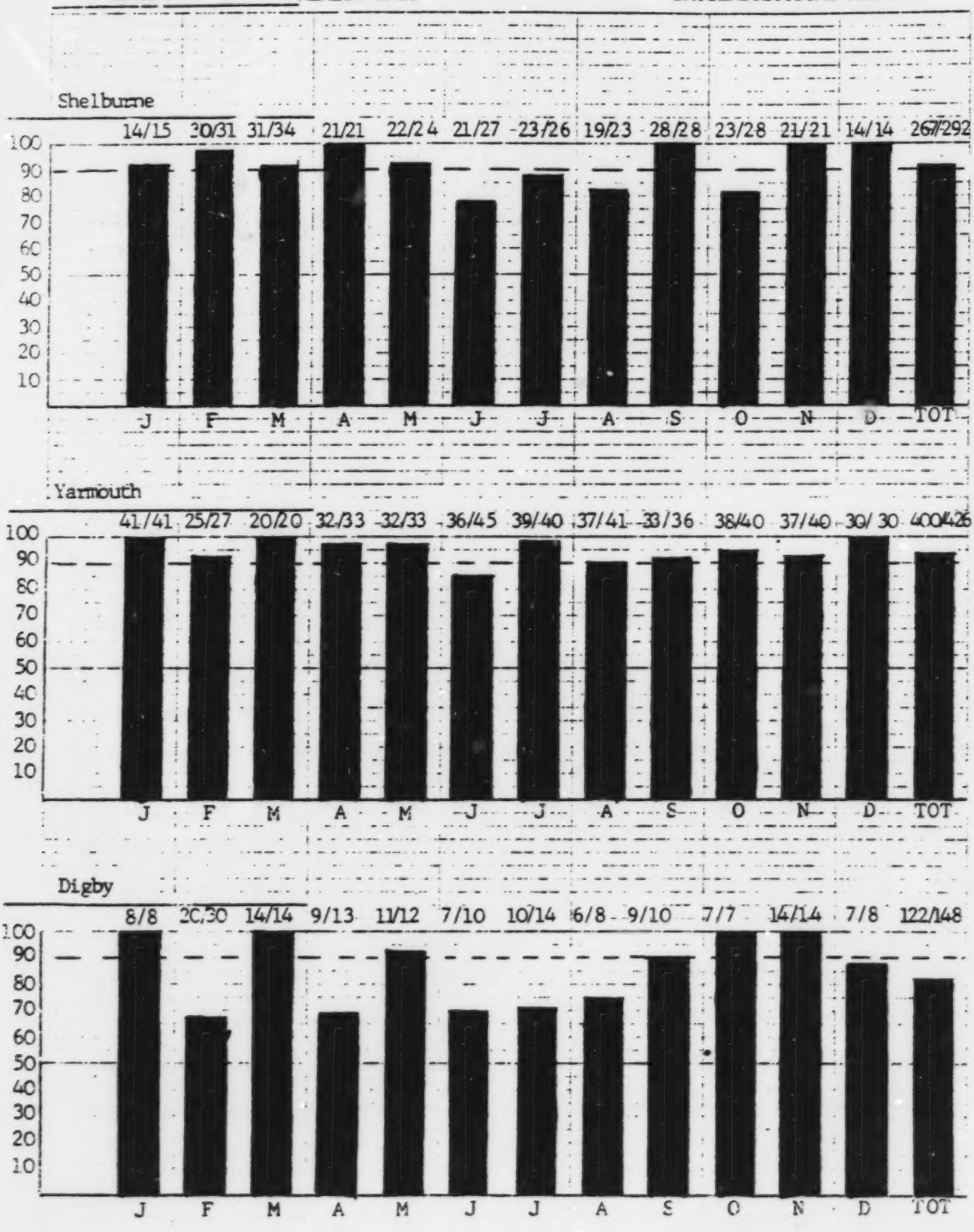
WESTERN HEALTH UNIT

1981

MUNICIPALITY	NUMBER OF SAMPLES TAKEN	NEGATIVE FOR COLIFORM ORGANISMS	
		NO.	%
Digby	154	122	79.2
Yarmouth	427	400	93.7
Shelburne	297	267	89.8

.../53

WESTERN HEALTH UNIT BACTERIOLOGICAL RESULTS



MONTH OF YEAR
1981

.../54

SECTION VI

SEWERAGE

1. PRIVATE SEWAGE DISPOSAL

Private sewage disposal includes all sewage disposal systems with the exception of sewage treatment plants, which serve individual domestic, commercial, industrial, and institutional establishments such as private homes, schools, trailers, campgrounds, and motels. Most of the inspections of private sewage disposal systems are associated with final inspections of septic tank systems serving private homes and other establishments, while a few are related to investigations and surveys of existing systems in response to complaints. The number of building lot inspections exceeds the number of private sewage disposal inspections because several inspections may be necessary to evaluate any one application and not all systems receive final inspection.

Large subdivisions serviced by individual wells and septic tank disposal systems are of particular concern to this division. Even if each individual lot is inspected and found suitable for the installation of a septic tank disposal system, the number and concentration of systems in a subdivision is such that the ground may become saturated with sewage effluent and individual wells may be affected. If servicing of subdivisions by individual wells and private sewage disposal systems is to be permitted in the future, large lot sizes and more preliminary planning and soil investigation will be necessary, if problems are to be avoided.

Following revision of the Regulations Respecting On-Site Sewage Disposal Systems in 1980 draft Subdivision Regulations have been prepared and are expected to be adopted in 1982. The drafting of these regulations represents a cooperative effort between the Division of Public Health Engineering and the Department of Municipal Affairs. They are designed to mesh with subdivision regulations under the Planning Act and to be administered jointly between planning staff of municipalities and engineers and inspectors with the Department of Health.

Presently a brochure entitled "Rural Septic Tank Sewage Disposal Systems" is available upon request and staff of the Division are working on further updating of the On-Site Sewage Disposal Regulations.

Another aspect of private sewage disposal is the requirement for sanitary surveys to determine the effects of malfunctioning systems. The following account is typical of the efforts of division staff in various parts of the province in 1981:

As a result of high bacteria counts in 1980 and previous years the Department of Health recommended to the Kings County Board of Health that the beach at Lake George be posted unsafe for summer swimming in 1981. To determine the source of contamination, it was decided to carry out a complete sanitary survey of the lake. In the spring of 1981, an Environmental Sanitary Survey Questionnaire was prepared and forwarded to the property owners.

A senior civil engineering student at the Technical University of Nova Scotia was hired by the Department of Health to carry out the following:

- to examine the questionnaires received from the property owners.
- to visit the properties and establish lot sizes and types of on-site sewage disposal systems.
- to conduct dye testing of water-carried sewage disposal systems.
- to prepare detailed lot diagrams of developed sites.
- to indicate the lots on a 1" to 200' scale map.
- to sample private water supplies where deemed necessary.
- to collect samples from established points on the lake on a weekly basis.

The survey found that 62% of the lots are less than 15,000 square feet while 76% are less than 40,000 square feet.

Out of 123 lots, 53 were dye tested; 19 were undeveloped; 12 had no existing systems, and 39 could not be tested because the owners were not available.

5 of 53 dye tests were positive and steps were taken to have remedial measures carried out.

The bacteriological sampling indicated satisfactory results and a recommendation to re-open the swimming area in 1982 was made. The survey will continue in 1982.

2. JOINT CERTIFICATES OF APPROVAL

The Division of Public Health Engineering reviews plans and makes recommendations to the Minister of Health, relative to the public health aspect of all water and sewerage projects submitted for Joint Approval of the Department of Health and the Department of Environment.

Of 125 applications recommended by the division for joint approval during 1981, 47 involved "sewerage only", while 25 involved a combination of "water and sewerage", with the remaining 53 involving only "water". A breakdown by Health Unit of all projects involving water and sewerage is as follows:

TABLE 3

JOINT CERTIFICATES OF APPROVAL

HEALTH UNIT	WATER	SEWER	BOTH	TOTAL
Atlantic	32	12	10	54
Cape Breton North	2	3	1	6
Cape Breton South	5	8	5	18
Cobequid	5	5	1	11
Fundy	-	7	2	9
Lunenburg-Queens	2	6	4	12
Northumberland	2	4	-	6
Western	5	2	2	9
TOTAL	53	47	25	125

.../58

A breakdown by region is as follows:

SEWER SYSTEM	#	%
Cape Breton	17	24
Antigonish, Guysborough, Pictou Colchester, Cumberland Counties	10	14
Atlantic Health Unit (Halifax County)	22	30
Hants, Lunenburg, Kings, Annapolis Queens, Digby, Yarmouth, Shelburne Counties	23	32
TOTALS	72	100

During 1981, considerable follow-up inspections on these projects by Regional Public Health Engineers, in coordination with the local Public Health Inspectors and Health Unit staff, were carried out.

It may be noted that the applications are consistent with 1980 - but 123 are still considerably less than 1979 - 179.

3. SEWAGE TREATMENT PLANTS

There are over 300 sewage treatment plants in Nova Scotia, most of which are small package plants, privately owned and operated. During 1980, 1,890 inspections of sewage treatment plants were carried out. Sampling included 1,915 (ODI) samples and 1,252 coliform samples. In addition, 901 chlorine residual tests were completed. Data for 1981 is unavailable but would be similar.

TABLE 4
PUBLIC HEALTH INSPECTION
SEWAGE TREATMENT PLANTS
PROVINCE OF NOVA SCOTIA

1981

	# OF PLANTS	ODI/BOD GREATER THAN 50 mg/l		CHLORINE RESIDUAL LESS THAN 0.5 ppm		LOG. COLIFORM AVG. GREATER THAN 5000/ 100 ml		PLANT OPERATION AND MAINTENANCE **	
SIZE IN GPD*	a	#	%	#	%	#	%	# UNSATISFAC-TORY	# SATISFACTORY
Under 5,000	29	24	83	20	69	24	83	11	13
5,001 - 10,000	21	11	52	14	67	17	81	5	8
10,001 - 25,000	19	18	95	11	58	15	79	7	4
25,001 - 50,000	16	9	56	11	69	14	88	3	9
50,001 - 100,000	15	9	60	11	73	13	87	2	13
Over 100,000	16	9	56	7	44	13	81	1	13
TOTALS	116	80	69	74	64	96	83	29	60
								33%	67%

* - US Gallons per day.
** - Subjective assessment of plant operation & maintenance to be on the basis of monthly inspection reports.
a - Report only sample results of plants which were sampled and inspected at least 4 times during the year.
- Number of sewage treatment

Table 4 summarizes sample and test results and includes a subjective assessment of operation and maintenance for all sewage treatment plants inspected at least 4 times during 1981 in Nova Scotia. 116 sewage treatment plants are reported and most of the plants are small package sewage treatment plants which are highly dependent on proper operation and maintenance to produce satisfactory results. A breakdown of the data by Health Unit is not included, as this information is reported in separate Health Unit Annual reports.

In comparison with the results of 1980, which were at best deplorable, those of 1981 were even worse. 69% of 116 plants reported exceeded the guidelines for effluent BOD (ODI) compared with 67% in 1980; 64% did not meet the guidelines for chlorine residual, 14% more than 1980; and 83% exceeded the guidelines for total coliform in the treated effluent compared to 76% in 1980. In many cases, the data on plants was not available, therefore, these percentages are only based on available information.

The need for full time, qualified operators was very evident during 1981, as in the past. Training courses for certification of operators were offered by the Department of Environment.

Sometime in the future, mandatory certification of operators should be required so that any person or municipality installing sewage treatment plants whould then be required to have a certified operator responsible for the operation and maintenance of the plant.

It is intended to continue the discussions with the Department of Environment concerning these issues. This continued dialogue would, hopefully, result in definite recommendations on all aspects of municipal wastewater disposal. Results to date have been discouraging however.

4. WASTEWATER MANAGEMENT DISTRICTS

A new concept, combining components of on-site disposal, central sewage collection and disposal and overall management systems has come to the fore in the past number of years. The Department of Health, in cooperation with the Departments of Municipal Affairs and Environment has been developing the concept and currently a pilot project is being funded in Port Maitland, Yarmouth County. If this concept is viable, and it appears to be, it should result in both capital and operating economies where applicable. The Department of Municipal Affairs has amended the Municipal Act to enable municipalities to form Wastewater Management Districts, and both the Departments of Health and Environment are requiring terms of reference for future pollution control studies to include assessment of every viable alternative. It is anticipated that future reports of this Division will contain further elaboration of this exciting new developments.

TABLE 4

HIGHLIGHTS OF SEWAGE COLLECTION AND TREATMENT PROGRAM

This program made up a large part of the workload of inspectors and engineers.

1) Two reports were studied and comments forwarded to consultants concerning upgrading of sewer services and sewage pumping facilities in

12) Controversy continued surrounding the Chester Basin Sewage Treatment Plant. The Municipality has moved to implement the recommendations of the Department of Health.

13) A sanitary survey was performed by the Department of Health on the Molega Lake area of Queens County and the results and recommendations were accepted by the Board of Health.

14) Problems continued with the Sandy Point Treatment Plant in Shelburne County.

15) A dome was constructed over the clarifer at the Lockeport Sewage Treatment Plant. Hopefully, this will alleviate the problems of freezing.

16) Sewer lines were extended along the Digby Neck road and a new sewage disposal system was installed at Three Island's School in Freeport.

17) A design was approved for the collection of sewage in the Village of Port Maitland. This is the prototype for Wastewater Management Districts in Nova Scotia intended to alleviate problems in sewage collection for rural areas. Unfortunately, this project has been put on hold due to administrative difficulties.

18) New collector mains were installed at the New Michelin Plant in Kings County and the sewage treatment plant at Waterville was expanded to accommodate the increased usage.

19) The Town of Middleton continued to expand its sewage collection facilities.

20) A new 100,000 gallon/day sewage treatment plant was put in use in Lantz, Hants County. The old treatment plant at Lantz was moved to Elmsdale which would double the capacity of the existing plant to approximately 70,000 gallon/day.

the Roach's Point and William's Lake areas of Halifax.

2) The Lakeside-Timberlea area was serviced with a new sewage treatment plant and two major pumping stations.

3) A thickener/decant tank was added to the Eastern Passage Sewage Treatment Plant which hopefully will eliminate odor problems.

4) A sewage treatment and disposal system was installed for the Lobster Supper Restaurant at Ingramport.

5) The town of Glace Bay continued its program of revamping its sewer system.

6) The Southwest Brook Sewage System consisting of 12,800 feet of sanitary sewer and an aerated oxidation pond was constructed to serve the College of Cape Breton, Adult Vocational Centre and Tanglewood Subdivision.

7) The Reserve Mines Sewerage System was constructed consisting of 3125 feet of sewer main and a 60,000 gallon/day oxidation pond with chlorine contact chamber.

8) Devco's Transportation and Railway Maintenance Centre was initiated with sanitary sewers leading to a 3 cell oxidation pond.

9) Approximately 4680 feet of 8 inch sewer was constructed to serve the Industrial Mall near Louisdale.

10) Sewage Collection and Treatment facilities were installed in the village of Joggins, Cumberland County, to eliminate the longstanding health and asthetic problems.

11) A new sewage collection system was installed to serve the Plymouth Park area of Pictou County.

.../64

22) The Department of Health performed a sanitary survey on Lake George, Kings County, the results and recommendations of which were accepted by the Board of Health. Monitoring of the lake will continue in 1982.

SECTION VII

MILK AND DAIRY PRODUCTS

The trend towards continued improvement in milk and cream bacteriological quality still continued during the year with only 9.9% of all milk and milk products examined indicating a coliform count of greater than 20/100 ml. as shown in table 5 . This result can be compared with 11.9% in 1980, 14.6% in 1979, 18.5% in 1978, 20.4% in 1977, 21.9% in 1976 and 30% greater than 20/100ml. in 1974.

This improvement in quality can be attributed in a large measure to in-place cleaning and the establishment of plant quality control staff and accompanying laboratory facilities, better raw milk quality and in-depth inspection carried out by Federal and Provincial Agriculture in addition to the regular inspections and monitoring carried out by the Health Department staff.

Ten (10) pasteurization plants were in operation in the province druing 1981, and most of the volume was produced by four major processors.

Fifteen (15) milk and milk product depots served the province in addition to the parent plants. These depots distributed products from the large processors.

As in the past few years five major manufacturers of ice cream and a number of distributors from outside the province were retailing ice cream and ice cream products within Nova Scotia during the year.

The monitoring of milk for vitamin content was carried out in all plants for such products as 2%, 1%, skim and chocolate. All plants stayed well within limits for vitamin content. Our Department worked closely with the Health Protection Branch of National Health and Welfare in the surveillance of vitamin content, hard ice cream, various iced milks and milkshakes.

The following table indicates the bacteriological quality of ice cream, both hard and soft, and gives a comparision in quality relative to other years going back to 1976. A slight rise in plate count was indicated but coliform content decreased from 18.6% in 1980 to 13.0% in 1981 using the guideline standard of >8/gram. 115 more samples were collected for analysis than for the pervious year.

TABLE 5

RESULTS OF EXAMINATION OF ICE CREAM

	TOTAL NO. OF SAMPLES	# OF COLIFORM >8/GRAM	%	# OF STANDARD PLATE COUNT >50,000/GRAM	%
1976	438	100	23	15	2.9
1977	465	65	13.9	10	2.2
1978	575	124	21.3	42	7.3
1979	446	94	21.0	22	5.0
1980	361	67	18.6	27	7.5
1981	476	62	13.0	43	9.0

.../67

Results of examination of milkshakes showed a decrease in Coliform count from 8.6% in 1980 to 4.8% the past year, with a reduction in average standard plate counts from 12.8% in 1980 to 7.0% for 1981. These trends are most reassuring when compared with the quality prior to 1976. Note table 6 for 1976 - 1981 comparisons.

Difficulties are still being experienced in individual food outlets such as restaurants or fast food outlets which prepare their own milkshakes and are not giving enough attention to the cleaning and sanitizing of equipment.

TABLE 6

RESULTS OF EXAMINATION OF MILKSHAKES

TOTAL NO. OF SAMPLES		# OF COLIFORM >10/GRAM	%	# OF STANDARD PLATE COUNT >50,000/GRAM	%
1976	41	5	12.0	2	5.0
1977	289	34	11.7	19	6.5
1978	570	86	15.1	60	5.0
1979	258	39	23.0	15	5.0
1980	281	24	8.5	36	12.8
1981	439	21	4.8	31	7.0

.../68

TABLE 7

RESULT OF EXAMINATION OF MILK
AND MILK PRODUCTS

PROVINCIAL HEALTH UNIT

1981

MILK AND MILK PRODUCTS EXAMINED	TOTAL NO. OF SAMPLES EXAMINED	SAMPLES WITH COLIFORM TEST GREATER THAN 20/100 ML		SAMPLES WITH PHOSPH. TEST GREATER THAN 80MCG PHEN/ML		SAMPLES WITH STAND. BACT. COUNT OF MORE THAN 30,000/ML	
		#	%	#	%	#	%
MILK	XXXXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
PASTEURIZED							
HOMOGENIZED	1733	169	9.8				
SKIMMED	1016	71	7.0				
PARTIALLY SKIMMED (2%)	1158	95	8.2				
OTHER	87	11	12.6				
CREAM	XXXXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
LIGHT(incl. blend,coffee and table	807	59	7.3				
HEAVY (whipping)	561	59	10.5				
ICE CREAM	XXXXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
ORDINARY							
SOFT (incl. sherbet & frozen custard)							
ICE CREAM BARS							
OTHER							
CHOCOLATE AND FLAVOURED MILK	1355	103	7.6				
TOTAL	5717	567	9.9				

.../69

SECTION VIII

RECREATIONAL SANITATION

Recreational Sanitation includes swimming areas, summer camps, picnic areas and camping establishments. Unfortunately there is insufficient data to complete this section for 1981.

SECTION IX

SOILD WASTE DISPOSAL

In 1981, as in previous years, sanitary landfilling was a necessary yet controversial part of solid waste disposal. Many towns and municipalities have accepted this method as a practical and economical means of solid waste disposal. Complaints and problems of soil conditions, poor management and lack of facilities have caused the re-evaluation of many of the existing "open dumps". Media coverage has in many cases compounded the problem of site selection for sanitary landfills. Gradually, however, sanitary landfills are losing their stigma, mainly due to the proper operation of existing sites.

A summary of solid waste management within the Province for 1981 is as follows:

1) The Municipality of the County of Halifax examined solid waste disposal methods for the eastern portion of Halifax County not served by the Regional Sanitary Landfill.

2) The Deputy Minister of Environment set up a committee consisting of Mr. Dan Nathanson, Chairman; the Cape Breton Fish and Game Socitey; the Bridgeport Environmental Committee; the Federal and Provincial Departments of Environment; Department of Health and the Cape Breton Development Corporation to oversee the implementation of standards and monitoring of the Deveo fine tailings pond near Kilkenny Lake.

.../71

3) Studies of solid waste disposal in the form of a regional sanitary landfill for municipal and industrial Cape Breton continued from which stemmed the Gillis Lake controversy.

4) A new sanitary landfill was opened in Granton, Pictou County.

5) Studies were initiated for the expansion of the landfill for the Municipality of Guysborough and a new proposal for the Municipality of St. Mary's.

6) Controversy continued over the Annapolis County sanitary landfill site with the further problem of possible presence of uranium bearing ore.

7) Problems were encountered with the Hants County incinerator at Brooklyn.

8) Due to improper operation and facilities the Gold River Dump was recommended to be closed and the Riverport Dump was closed, both in Lunenburg County.

9) A study for solid waste management for the Municipality of Chester was initiated.

10) A proposal was put forth for the site of a sanitary landfill to serve the Municipality of Clare, Digby County.

.../72

11) A report was made on the status of the Strickland Road modified landfill site in Yarmouth County.

Soild waste management continues to be an important program for the Division of Public Health Engineering but with gradual upgrading of existing facilities it is hoped that eventually less participation will be necessary.

SECTION X

FOOD SANITATION

Unfortunatley there is insufficient data to complete this section for 1981.

SECTION XI

SCHOOLS

The Department of Education approves all schools in the Province and in turn, requires approval from the Department of Health for the school plans. To ensure uniformity within the Department, co-operation and approval is the responsibility of the Director, Division of Public Health Engineering. The Director refers the plans to the Regional Engineer who co-ordinates approval at the Health Unit level.

The Division of Public Health Engineering advises the Municipalities and their consultants or architects on matters relating to the construction of new schools, the upgrading of existing schools and relocatable classrooms.

Following is a breakdown of the responsibilities:

(a) SITE APPROVALS

The Regional Public Health Engineer and/or the area Public Health Inspector, through the Health Unit Director, gives advice with respect to site location, water supply and sewage disposal.

(b) PRELIMINARY AND FINAL PLANS

The Regional Public Health Engineers examins the design of the water supply and distribution system and capacity of sewage disposal facilities. In addition, the Engineer examines the plans for lighting, ventilation, washroom facilities, and adequacy of the Nurses' room. Plans which include kitchen facilities and cafeterias are referred to the area Public Health Inspector for comment.

(c) FINAL APPROVAL

The area Public Health Inspector inspects the school to ensure that it conforms to the approved final plans.

Plans which include industrial arts shops are referred to the Department'a Occupational Health Engineer for comments on the proposed ventilation.

During 1981, a total of 13 school projects were processed for approval, down form 23 in 1980. The following table gives the breakdown of school approvals.

TABLE 8

HEALTH UNIT	PRELIMINAPY	FINAL	TOTAL
Atlantic	-	1	1
Cape Breton North	1	3	4
Cape Breton South	-	-	-
Cobequid	-	-	-
Fundy	1	1	2
Lunenburg-Queens	-	-	-
Northumberland	3	2	5
Western	-	1	1
TOTAL	5	8	13

Survey of Schools for Asbestos Containing Materials

The Division of Public Health Engineering continued a major program during 1981, commenced in 1980, consisting of a province-wide assessment of schools for materials containing asbestos, and an evaluation of the health risks posed by this material. The task included the development of a province-wide program for systematic identification, sampling, analysis, evaluation and preparation of recommendations for taking appropriate remedial measures for areas within schools which employed materials containing asbestos in a form which posed a health risk to pupils and staff.

The program was developed in close cooperation with the Department of Education who are responsible for implementation of recommendations for corrective action in each case. The major challange of this program was the education of personnel at all levels within the Department, as well as those involved within the Department of Education and the maintenance of uniformity across the Province. Numerous meetings were held within the Department and with the Department of Education with the purpose of educating and developing a meaningful program.

This project is now essentially complete with follow-up, as required in specific cases, and routine inspections being carried out.

.../77

POOR

QUALITY

ORIGINAL